

Appl. No. 10/825,380
Amdt. dated September 7, 2005
Reply to Office action of June 7, 2005

Amendments to the Claims:

The listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

1. (currently amended) A continuous process to produce a branched olefin polymer comprising:
 - 1) selecting a first catalyst component capable of producing a polymer having an weight average molecular weight M_w of 100,000 or less and a crystallinity of 20% or less under selected polymerization conditions;
 - 2) selecting a second catalyst component capable of producing polymer having an weight average molecular weight M_w of 100,000 or less and a crystallinity of 20% or more at the selected polymerization conditions;
 - 3) contacting said first catalyst component or said second catalyst component ~~a catalyst component~~, one or more activators, and one or more C2 to C40 olefins in a first reaction zone, at a temperature of greater than 70°C, and at a residence time of 120 minutes or less; and
 - 4) transferring the contents of the first reaction zone to a second reaction zone and further contacting the contents with a said first catalyst component or said second catalyst component, an one or more ~~an~~ activators, and or one or more ~~or~~ C2 to C40 olefins, at a temperature of greater than 70°C, and at a residence time of 120 minutes or less; and
 - 5) optionally, transferring the contents of the second reaction zone to a third reaction zone and further contacting the contents with a said first catalyst compound, component or said second catalyst component, an one or more ~~an~~ activators,

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and ~~or~~ one or more C2 to C40 olefins, at a temperature of greater than 70°C, and at a residence time of 120 minutes or less; and

6) recovering a branched olefin polymer comprising at least 50 mole% of one or more C3 to C40 olefins,

where the first catalyst component is present in at least one reaction zone and the second catalyst component is present in a the second reaction zone or a third reactor zone, and wherein, in at least one reaction zone, the C2 to C40 olefin is a C3 to C40 alpha-olefin.

2. (original) The process of claim 1 wherein the olefin polymer comprises from 50 to 100 mole% of propylene.

3. (original) The process of claim 1 wherein the olefin polymer is homopolypropylene.

4. (original) The process of claim 1 wherein the first catalyst component comprises a non-stereospecific metallocene catalyst compound.

5. (original) The process of claim 1 wherein the second catalyst component comprises a stereospecific metallocene catalyst compound.

6. (currently amended) The process of claim 1 wherein propylene is present in the first reaction zone.

7. (currently amended) The process of claim 1 wherein propylene is present in the second reaction zone.

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8. (currently amended) The process of claim 1 wherein propylene is present in a third reaction zone.
9. (currently amended) The process of claim 1 wherein ethylene is present in the first reaction zone.
10. (currently amended) The process of claim 1 wherein ethylene is present in the second reaction zone.
11. (currently amended) The process of claim 1 wherein ethylene is present in a third reaction zone.
12. (original) The process of claim 1 wherein propylene and ethylene are present in the first reaction zone.
13. (original) The process of claim 1 wherein propylene and ethylene are present in the second reaction zone.
14. (currently amended) The process of claim 1 wherein propylene is present in the first reaction zone at 100 weight %, based upon the weight of the monomers present.
15. (currently amended) The process of claim 1 wherein propylene is present in the second reaction zone at 100 weight %, based upon the weight of the monomers present.
16. (currently amended) The process of claim 1 wherein propylene is present in a third reaction zone at 100 weight %, based upon the weight of the monomers present.

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17. (currently amended) The process of claim 1 wherein propylene is present in the first reaction zone at 100 weight %, ~~(based upon the weight of the monomers present in the first reaction zone)~~ and ethylene is present in the second reaction zone at up to 50 weight%, ~~(based upon the weight of the monomers present in the second reaction zone)~~.
18. (currently amended) The process of claim 1 wherein propylene and ethylene are present in the first reaction zone and no ethylene, other than residual ethylene monomer present in the contents of the first reaction zone, is introduced into the second reaction zone.
19. (currently amended) The process of claim 1 wherein ethylene is intermittently introduced into one or more reaction zones.
20. (currently amended) The process of claim 1 wherein ethylene is present in a reaction zone at less than 10 weight%, based upon the weight of the monomers in the reaction zone..
21. (original) The process of claim 1 wherein propylene is present in the first reaction zone, ethylene is present in the second reaction zone, the second catalyst component is present in the first reaction zone, and the first catalyst component is present in the second reaction zone.
22. (original) The process of claim 1 wherein propylene is present in the first reaction zone, propylene and ethylene are present in the second reaction zone, the second catalyst component is present in the first reaction zone, and the first catalyst component is present in the second reaction zone.

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23. (original) The process of claim 1 wherein propylene and ethylene are present in the first reaction zone, propylene is present in the second reaction zone, the first catalyst component is present in the first reaction zone, and the second catalyst component is present in the second reaction zone.

24. (original) The process of claim 1 wherein propylene is present in the first reaction zone, propylene and ethylene are present in the second reaction zone, the second catalyst component is present in the first reaction zone, and the second catalyst component is present in the second reaction zone.

25. (currently amended) The process of claim 1 wherein ethylene is present in the first reaction zone, propylene is present in the second reaction zone, propylene is present in the third reaction zone, the first catalyst component is present in the second reaction zone, and the second catalyst component is present in ~~a~~ the third reaction zone, and the catalyst ~~component~~ ~~compound~~ present in the first reaction zone is capable of producing polymer having an Mw weight average molecular weight of 20,000 or less and a crystallinity of 10% or less at the selected polymerization conditions.

26. (currently amended) The process of claim 1 wherein

- 1) the first catalyst component comprises a non-sterospecific metallocene catalyst compound;
- 2) the second catalyst component comprises a sterospecific metallocene catalyst compound;
- 3) the first reaction zone is a reactor comprising solvent, monomer, said first catalyst component or said second catalyst ~~compound~~ component, and activator at a temperature of greater than 70°C; and

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4) The second reaction zone is a reactor comprising solvent, monomer, ~~catalyst compound~~ said first catalyst component or said second catalyst component, and activator at a temperature of greater than 70°C.

27. (currently amended) The process of claim 1 wherein the ~~catalyst compound~~ first catalyst component capable of producing polymer having an ~~Mw weight average~~ molecular weight of 100,000 or less and a crystallinity of ~~10~~ 20% or less is selected from the group consisting of: rac-dimethylsilylbis(4,7-dimethylindenyl) hafnium dichloride, rac-dimethylsilylbis(4,7-dimethylindenyl) hafnium dimethyl, rac-dimethylsilylbis(4,7-dimethylindenyl) zirconium dichloride, rac-dimethylsilylbis(4,7-dimethylindenyl) zirconium dimethyl, rac-dimethylsilylbis(indenyl) hafnium dichloride, rac-dimethylsilylbis(indenyl) hafnium dimethyl, rac-dimethylsilylbis(indenyl) zirconium dichloride, rac-dimethylsilylbis(indenyl) zirconium dimethyl, rac-dimethylsilylbis(tetrahydroindenyl) hafnium dichloride, rac-dimethylsilylbis(tetrahydroindenyl) hafnium dimethyl, rac-dimethylsilylbis(tetrahydroindenyl) zirconium dichloride, rac-dimethylsilylbis(tetrahydroindenyl) zirconium dimethyl, rac-diphenylsilylbis(4,7-dimethylindenyl) hafnium dichloride, rac-diphenylsilylbis(4,7-dimethylindenyl) hafnium dimethyl, rac-diphenylsilylbis(4,7-dimethylindenyl) zirconium dichloride, rac-diphenylsilylbis(4,7-dimethylindenyl) zirconium dimethyl, rac-diphenylsilylbis(indenyl) hafnium dichloride, rac-diphenylsilylbis(indenyl) hafnium dimethyl, rac-diphenylsilylbis(indenyl) zirconium dichloride, rac-diphenylsilylbis(indenyl) zirconium dimethyl, rac-diphenylsilylbis(tetrahydroindenyl) hafnium dichloride, rac-diphenylsilylbis(tetrahydroindenyl) hafnium dimethyl, rac-diphenylsilylbis(tetrahydroindenyl) zirconium dichloride, rac-diphenylsilylbis(tetrahydroindenyl) zirconium dimethyl, rac-methylphenylsilylbis(4,7-dimethylindenyl) hafnium dichloride, rac-

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methylphenylsilylbis(4,7-dimethylindenyl) hafnium dimethyl, rac-methylphenylsilylbis(4,7-dimethylindenyl) zirconium dichloride, rac-methylphenylsilylbis(4,7-dimethylindenyl) zirconium dimethyl, rac-methylphenylsilylbis(indenyl) hafnium dichloride, rac-methylphenylsilylbis(indenyl) hafnium dimethyl, rac-methylphenylsilylbis(indenyl) zirconium dichloride, rac-methylphenylsilylbis(indenyl) zirconium dimethyl, rac-methylphenylsilylbis(tetrahydroindenyl) hafnium dichloride, rac-methylphenylsilylbis(tetrahydroindenyl) hafnium dimethyl, rac-methylphenylsilylbis(tetrahydroindenyl) zirconium dichloride, rac-methylphenylsilylbis(tetrahydroindenyl) zirconium dimethyl, rac-ethylenebis(4,7-dimethylindenyl) hafnium dichloride, rac-ethylenebis(4,7-dimethylindenyl) hafnium dimethyl, rac-ethylenebis(4,7-dimethylindenyl) zirconium dichloride, rac-ethylenebis(4,7-dimethylindenyl) zirconium dimethyl, rac-ethylenebis(indenyl) hafnium dichloride, rac-ethylenebis(indenyl) hafnium dimethyl, rac-ethylenebis(indenyl) zirconium dichloride, rac-ethylenebis(indenyl) zirconium dimethyl, rac-ethylenebis(tetrahydroindenyl) hafnium dichloride, rac-ethylenebis(tetrahydroindenyl) hafnium dimethyl, rac-ethylenebis(tetrahydroindenyl) zirconium dichloride, and rac-ethylenebis(tetrahydroindenyl) zirconium dimethyl.

28. (original) The process of claim 1 wherein the first catalyst component comprises one or more of
dimethylsilyl(tetramethylcyclopentadienyl)(cyclododecylamido) titanium dichloride,
dimethylsilyl(tetramethylcyclopentadienyl)(cyclohexyl-amido) titanium dichloride,
dimethylsilyl(tetramethylcyclopentadienyl)(1-adamantylamido) titanium dichloride,
dimethylsilyl(tetramethylcyclopentadienyl)(t-butylamido) titanium dichloride,
dimethylsilyl(tetramethylcyclopentadienyl)(s-butylamido) titanium dichloride,
dimethylsilyl(tetramethylcyclopentadienyl)(n-butylamido) titanium dichloride,

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dimethylsilyl(tetramethylcyclopentadienyl)(exo-2-norbomylamido) titanium
dichloride,
diethylsilyl(tetramethylcyclopentadienyl)(cyclododecyl-amido) titanium dichloride,
diethylsilyl(tetramethylcyclopentadienyl)(exo-2-norbornylamido) titanium dichloride,
diethylsilyl(tetramethylcyclopentadienyl)(cyclohexyl-amido) titanium dichloride,
diethylsilyl(tetramethylcyclopentadienyl)(1-adamantylamido) titanium dichloride,
methylene(tetramethylcyclopentadienyl)(cyclododecyl-amido) titanium dichloride,
methylene(tetramethylcyclopentadienyl)(exo-2-norbornylamido) titanium dichloride,
methylene(tetramethylcyclopentadienyl)(cyclohexylamido) titanium dichloride,
methylene(tetramethylcyclopentadienyl)(1-adamantylamido) titanium dichloride,
dimethylsilyl(tetramethylcyclopentadienyl)(cyclododecylamido) titanium dimethyl,
dimethylsilyl(tetramethylcyclopentadienyl)(exo-2-norbornylamido) titanium
dimethyl,
dimethylsilyl(tetramethylcyclopentadienyl)(cyclohexyl-amido) titanium dimethyl,
dimethylsilyl(tetramethylcyclopentadienyl)(1-adamantylamido) titanium dimethyl,
dimethylsilyl(2,5-dimethylcyclopentadienyl)(cyclododecylamido) titanium
dichloride,
dimethylsilyl(2,5-dimethylcyclopentadienyl)(exo-2-norbornylamido) titanium
dichloride,
dimethylsilyl(2,5-dimethylcyclopentadienyl)(cyclohexylamido) titanium dichloride,
dimethylsilyl(2,5-dimethylcyclopentadienyl)(1-adamantylamido) titanium dichloride,
dimethylsilyl(3,4-dimethylcyclopentadienyl)(cyclododecylamido) titanium
dichloride,
dimethylsilyl(3,4-dimethylcyclopentadienyl)(exo-2-norbornylamido) titanium
dichloride,
dimethylsilyl(3,4-dimethylcyclopentadienyl)(cyclohexylamido) titanium dichloride,
dimethylsilyl(3,4-dimethylcyclopentadienyl)(1-adamantylamido) titanium dichloride,

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dimethylsilyl(2-ethyl-5-methylcyclopentadienyl)(cyclododecylamido)titanium
dichloride,
dimethylsilyl(2-ethyl-5-methylcyclopentadienyl)(exo-2-norbornylamido) titanium
dichloride, dimethylsilyl(2-ethyl-5-methylcyclopentadienyl)(cyclohexylamido) titanium
dichloride,
dimethylsilyl(2-ethyl-5-methylcyclopentadienyl)(1-adamantylamido) titanium
dichloride,
dimethylsilyl(3-ethyl-4-methylcyclopentadienyl)(cyclododecylamido)titanium
dichloride,
dimethylsilyl(3-ethyl-4-methylcyclopentadienyl)(exo-2-norbornylamido) titanium
dichloride,
dimethylsilyl(3-ethyl-4-methylcyclopentadienyl)(cyclohexylamido) titanium dichloride,
dimethylsilyl(3-ethyl-4-methylcyclopentadienyl)(1-adamantylamido) titanium
dichloride,
dimethylsilyl(2-ethyl-3-hexyl-5-methyl-4-octylcyclopentadienyl)(cyclododecylamido)
titanium dichloride,
dimethylsilyl(2-ethyl-3-hexyl-5-methyl-4-octylcyclopentadienyl)(exo-2-
norbornylamido) titanium dichloride,
dimethylsilyl(2-ethyl-3-hexyl-5-methyl-4-octylcyclopentadienyl)(cyclohexylamido)
titanium dichloride,
dimethylsilyl(2-ethyl-3-hexyl-5-methyl-4-octylcyclopentadienyl)(1-adamantylamido)
titanium dichloride,
dimethylsilyl(2-tetrahydroindenyl)(cyclododecylamido) titanium dichloride,
dimethylsilyl(2-tetrahydroindenyl)(cyclohexylamido) titanium dichloride,
dimethylsilyl(2-tetrahydroindenyl)(1-adamantylamido) titanium dichloride,
dimethylsilyl(2-tetrahydroindenyl)(exo-2-norbornylamido) titanium dichloride,
dimethylsilyl(tetramethylcyclopentadienyl)(cyclododecylamido) titanium dimethyl,
dimethylsilyl(tetramethylcyclopentadienyl)(cyclohexyl-amido) titanium dimethyl,

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dimethylsilyl(tetramethylcyclopentadienyl)(1-adamantylamido) titanium dimethyl,
dimethylsilyl(tetramethylcyclopentadienyl)(t-butylamido) titanium dimethyl,
dimethylsilyl(tetramethylcyclopentadienyl)(s-butylamido) titanium dimethyl,
dimethylsilyl(tetramethylcyclopentadienyl)(n-butylamido) titanium dimethyl,
dimethylsilyl(tetramethylcyclopentadienyl)(exo-2-norbomylamido) titanium
dimethyl,
diethylsilyl(tetramethylcyclopentadienyl)(cyclododecyl-amido) titanium dimethyl,
diethylsilyl(tetramethylcyclopentadienyl)(exo-2-norbornylamido) titanium dimethyl,
diethylsilyl(tetramethylcyclopentadienyl)(cyclohexyl-amido) titanium dimethyl,
diethylsilyl(tetramethylcyclopentadienyl)(1-adamantylamido) titanium dimethyl,
methylene(tetramethylcyclopentadienyl)(cyclododecyl-amido) titanium dimethyl,
methylene(tetramethylcyclopentadienyl)(exo-2-norbornylamido) titanium dimethyl,
methylene(tetramethylcyclopentadienyl)(cyclohexylamido) titanium dimethyl,
methylene(tetramethylcyclopentadienyl)(1-adamantylamido) titanium dimethyl,
dimethylsilyl(tetramethylcyclopentadienyl)(cyclododecylamido) titanium dimethyl,
dimethylsilyl(tetramethylcyclopentadienyl)(exo-2-norbornylamido) titanium
dimethyl,
dimethylsilyl(tetramethylcyclopentadienyl)(cyclohexyl-amido) titanium dimethyl,
dimethylsilyl(tetramethylcyclopentadienyl)(1-adamantylamido) titanium dimethyl,
dimethylsilyl(2,5-dimethylcyclopentadienyl)(cyclododecylamido) titanium dimethyl,
dimethylsilyl(2,5-dimethylcyclopentadienyl)(exo-2-norbornylamido) titanium
dimethyl,
dimethylsilyl(2,5-dimethylcyclopentadienyl)(cyclohexylamido) titanium dimethyl,
dimethylsilyl(2,5-dimethylcyclopentadienyl)(1-adamantylamido) titanium dimethyl,
dimethylsilyl(3,4-dimethylcyclopentadienyl)(cyclododecylamido) titanium dimethyl,
dimethylsilyl(3,4-dimethylcyclopentadienyl)(exo-2-norbornylamido) titanium
dimethyl,
dimethylsilyl(3,4-dimethylcyclopentadienyl)(cyclohexylamido) titanium dimethyl,

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dimethylsilyl(3,4-dimethylcyclopentadienyl)(1-adamantylamido) titanium dimethyl,
dimethylsilyl(2-ethyl-5-methylcyclopentadienyl)(cyclododecylamido)titanium
dimethyl,
dimethylsilyl(2-ethyl-5-methylcyclopentadienyl)(exo-2-norbornylamido) titanium
dimethyl, dimethylsilyl(2-ethyl-5-methylcyclopentadienyl)(cyclohexylamido) titanium
dimethyl,
dimethylsilyl(2-ethyl-5-methylcyclopentadienyl)(1-adamantylamido) titanium
dimethyl,
dimethylsilyl(3-ethyl-4-methylcyclopentadienyl)(cyclododecylamido)titanium
dimethyl,
dimethylsilyl(3-ethyl-4-methylcyclopentadienyl)(exo-2-norbornylamido) titanium
dimethyl,
dimethylsilyl(3-ethyl-4-methylcyclopentadienyl)(cyclohexylamido) titanium dimethyl,
dimethylsilyl(3-ethyl-4-methylcyclopentadienyl)(1-adamantylamido) titanium
dimethyl,
dimethylsilyl(2-ethyl-3-hexyl-5-methyl-4-octylcyclopentadienyl)(cyclododecylamido)
titanium dimethyl,
dimethylsilyl(2-ethyl-3-hexyl-5-methyl-4-octylcyclopentadienyl)(exo-2-
norbornylamido) titanium dimethyl,
dimethylsilyl(2-ethyl-3-hexyl-5-methyl-4-octylcyclopentadienyl)(cyclohexylamido)
titanium dimethyl,
dimethylsilyl(2-ethyl-3-hexyl-5-methyl-4-octylcyclopentadienyl)(1-adamantylamido)
titanium dimethyl,
dimethylsilyl(2-tetrahydroindenyl)(cyclododecylamido) titanium dimethyl,
dimethylsilyl(2-tetrahydroindenyl)(cyclohexylamido) titanium dimethyl,
dimethylsilyl(2-tetrahydroindenyl)(1-adamantylamido) titanium dimethyl, and
dimethylsilyl(2-tetrahydroindenyl)(exo-2-norbornylamido) titanium dimethyl.

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29. (original) The process of claim 1 wherein the second catalyst component comprises one or more of the racemic versions of:

dimethylsilyl (2-methyl-4-phenylindenyl) zirconium dichloride,
dimethylsilyl (2-methyl-4-phenylindenyl) zirconium dimethyl,
dimethylsilyl (2-methyl-4-phenylindenyl) hafnium dichloride,
dimethylsilyl (2-methyl-4-phenylindenyl) hafnium dimethyl,
dimethylsilyl bis(indenyl)hafnium dimethyl,
dimethylsilyl bis(indenyl)hafnium dichloride,
dimethylsilyl bis(indenyl)zirconium dimethyl,
dimethylsilyl bis(indenyl)zirconium dichloride,
the racemic isomers of:

dimethylsilanediylbis(2-methyl)metal dichloride;
dimethylsilanediylbis(indenyl)metal dichloride;
dimethylsilanediylbis(indenyl)metal dimethyl;
dimethylsilanediylbis(tetrahydroindenyl)metal dichloride;
dimethylsilanediylbis(tetrahydroindenyl)metal dimethyl;
dimethylsilanediylbis(indenyl)metal diethyl; and
dibenzylsilanediylbis(indenyl)metal dimethyl;
wherein the metal can be chosen from Zr, Hf, or Ti.

30. (original) The process of claim 1 wherein the first catalyst component comprises 1, 1'-bis(4-triethylsilylphenyl)methylene-(cyclopentadienyl)(2,7-di-tertiary-butyl-9-fluorenyl)hafnium dimethyl and or 1, 1'-bis(4-triethylsilylphenyl)methylene-(cyclopentadienyl)(3,8-di-tertiary-butyl-fluorenyl)hafnium dimethyl.

31. (currently amended) The process of claim 1 wherein the second catalyst component comprises dimethylsilyl bis(2-methyl-5-phenylindenyl) zirconium

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~~diemethyl dimethyl~~ and/or dimethylsilyl bis(2-methyl-4-phenylindenyl) zirconium
~~diemethyl dimethyl~~.

32. (original) The process of claim 1 wherein the activator comprises dimethylaniliniumtetrakis(pentafluorophenyl) borate and or trityl tetrakis(pentafluorophenyl) borate.
33. (original) The process of claim 1 wherein the activator comprises an alumoxane.
34. (original) The process of claim 1 wherein the activator comprises an ionizing compound.
35. (original) The process of claim 1 wherein the activator comprises a non-coordinating anion.
36. (original) The process of claim 1 wherein the activator comprises one or more of methylalumoxane,
trimethylammonium tetraphenylborate,
triethylammonium tetraphenylborate,
tripropylammonium tetraphenylborate,
tri(n-butyl)ammonium tetraphenylborate,
tri(t-butyl)ammonium tetraphenylborate,
N,N-dimethylanilinium tetraphenylborate,
N,N-diethylanilinium tetraphenylborate,
N,N-dimethyl-(2,4,6-trimethylanilinium) tetraphenylborate,
trimethylammonium tetrakis(pentafluorophenyl)borate,
triethylammonium tetrakis(pentafluorophenyl)borate,

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tripropylammonium tetrakis(pentafluorophenyl)borate,
tri(n-butyl)ammonium tetrakis(pentafluorophenyl)borate,
tri(sec-butyl)ammonium tetrakis(pentafluorophenyl) borate,
N,N-dimethylanilinium tetrakis(pentafluorophenyl) borate,
N,N-diethylanilinium tetrakis(pentafluorophenyl) borate,
N,N-dimethyl-(2,4,6-trimethylanilinium) tetrakis(pentafluorophenyl) borate,
trimethylammonium tetrakis-(2,3,4,6-tetrafluorophenyl)borate,
triethylammonium tetrakis-(2,3,4,6-tetrafluorophenyl) borate,
tripropylammonium tetrakis-(2,3,4,6-tetrafluorophenyl) borate,
tri(n-butyl)ammonium tetrakis-(2,3,4,6-tetrafluoro-phenyl) borate,
dimethyl(t-butyl)ammonium tetrakis-(2,3,4,6-tetrafluorophenyl) borate,
N,N-dimethylanilinium tetrakis-(2,3,4,6-tetrafluorophenyl) borate,
N,N-diethylanilinium tetrakis-(2,3,4,6-tetrafluorophenyl) borate, and
N,N-dimethyl-(2,4,6-trimethylanilinium)tetrakis-(2,3,4,6-tetrafluorophenyl) borate;
di-(i-propyl)ammonium tetrakis(pentafluorophenyl) borate;
dicyclohexylammonium tetrakis(pentafluorophenyl) borate;
triphenylphosphonium tetrakis(pentafluorophenyl) borate;
tri(o-tolyl)phosphonium tetrakis(pentafluorophenyl) borate; and
tri(2,6-dimethylphenyl)phosphonium tetrakis(pentafluorophenyl) borate.

37. (currently amended) The process of claim 1 wherein the first catalyst component is capable of polymerizing macromonomers having reactive termini; and the second catalyst component is capable of producing macromonomers having reactive termini.

38. (original) The process of claim 1 wherein one or more reaction zones further comprise diolefin.

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39. (original) The process of claim 1 wherein one or more reaction zones further comprise one or more C4 to C40 dienes.

40. (original) The process of claim 1 wherein one or more reaction zones further comprise one or more dienes selected from the group consisting of 1,6-heptadiene, 1,7-octadiene, 1,8-nonadiene, 1,9-decadiene, 1,10-undecadiene, 1,11-dodecadiene, 1,12-tridecadiene, 1,13-tetradecadiene, cyclopentadiene, vinylnorbornene, norbornadiene, ethylidene norbornene, divinylbenzene, dicyclopentadiene, polybutadienes having an Mw less than 1000 g/mol, or combinations thereof.

41. (original) The process of claim 1 wherein at least one reaction zone is a gas phase reactor.

42. (original) The process of claim 1 wherein at least one reaction zone is a solution phase reactor.

43. (original) The process of claim 1 wherein at least one reaction zone is a slurry phase reactor.

44. (original) The process of claim 1 wherein all of the reaction zones are a solution phase reactor.

45. (original) The process of claim 1 wherein the first catalyst component, the second catalyst component and the activator comprise one or more of the following combinations (where Me equals methyl, Ph equals phenyl, Et equals ethyl, Cp equals cyclopentadienyl, 3,6-di-t-BuFlu equals 3,8-di-tert-butylfluorenyl, 2-Me-4-PhInd equals 2-methyl-4-phenylindenyl, 2-MeInd means 2-methylindenyl, c-C₁₂H₂₃ equals

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cyclododecyl, Me_4C_5 - tetramethylcyclopentadienyl, H_4Ind equals tetrahydroindenyl, and Ind equals indenyl):

(1) $\text{Me}_2\text{Si}(\text{Me}_4\text{C}_5)(\text{N-c-C}_{12}\text{H}_{23})\text{TiCl}_2$ and $\text{rac-Me}_2\text{Si}(2\text{-Me-4-PhInd})_2\text{ZrCl}_2$ activated with an alumoxane;

(2) $\text{Me}_2\text{Si}(\text{Me}_4\text{C}_5)(\text{N-c-C}_{12}\text{H}_{23})\text{TiMe}_2$ and $\text{rac-Me}_2\text{Si}(2\text{-Me-4-PhInd})_2\text{ZrMe}_2$ activated with a non-coordinating anion activator,

(2a) $\text{Me}_2\text{Si}(\text{Me}_4\text{C}_5)(\text{N-c-C}_{12}\text{H}_{23})\text{TiMe}_2$ and $\text{rac-Me}_2\text{Si}(2\text{-Me-4-PhInd})_2\text{ZrMe}_2$ activated with N,N-dimethylanilinium tetrakis(pentafluorophenyl)boron and or triphenylcarbonium tetrakis(pentafluorophenyl)boron;

(3) $\text{Me}_2\text{Si}(\text{Me}_4\text{C}_5)(\text{N-c-C}_{12}\text{H}_{23})\text{TiCl}_2$ and $\text{rac-Me}_2\text{Si}(2\text{-MeInd})_2\text{ZrCl}_2$ activated with an alumoxane;

(4) $\text{Me}_2\text{Si}(\text{Me}_4\text{C}_5)(\text{N-c-C}_{12}\text{H}_{23})\text{TiMe}_2$ and $\text{rac-Me}_2\text{Si}(2\text{-MeInd})_2\text{ZrMe}_2$ activated with a non-coordinating anion activator;

(4a) $\text{Me}_2\text{Si}(\text{Me}_4\text{C}_5)(\text{N-c-C}_{12}\text{H}_{23})\text{TiMe}_2$ and $\text{rac-Me}_2\text{Si}(2\text{-MeInd})_2\text{ZrMe}_2$ activated with N,N-dimethylanilinium tetrakis(pentafluorophenyl)boron and or triphenylcarbonium tetrakis(pentafluorophenyl)boron;

(5) $\text{Me}_2\text{Si}(\text{Me}_4\text{C}_5)(\text{N-1-adamantyl})\text{TiCl}_2$ and $\text{rac-Me}_2\text{Si}(2\text{-Me-4-PhInd})_2\text{ZrCl}_2$ activated with an alumoxane;

(6) $\text{Me}_2\text{Si}(\text{Me}_4\text{C}_5)(\text{N-1-adamantyl})\text{TiMe}_2$ and $\text{rac-Me}_2\text{Si}(2\text{-Me-4-PhInd})_2\text{ZrMe}_2$ activated with a non-coordinating anion activator;

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(6a) $\text{Me}_2\text{Si}(\text{Me}_4\text{C}_5)(\text{N-1-adamantyl})\text{TiMe}_2$ and $\text{rac-Me}_2\text{Si}(2\text{-Me-4-PhInd})_2\text{ZrMe}_2$ activated with N,N-dimethylanilinium tetrakis(pentafluorophenyl)boron and or triphenylcarbonium tetrakis(pentafluorophenyl)boron;

(7) $\text{Me}_2\text{Si}(\text{Me}_4\text{C}_5)(\text{N-1-adamantyl})\text{TiCl}_2$ and $\text{rac-Me}_2\text{Si}(2\text{-MeInd})_2\text{ZrCl}_2$ activated with an alumoxane;

(8) $\text{Me}_2\text{Si}(\text{Me}_4\text{C}_5)(\text{N-1-adamantyl})\text{TiMe}_2$ and $\text{rac-Me}_2\text{Si}(2\text{-MeInd})_2\text{ZrMe}_2$ activated with a non-coordinating anion activator;

(8a) $\text{Me}_2\text{Si}(\text{Me}_4\text{C}_5)(\text{N-1-adamantyl})\text{TiMe}_2$ and $\text{rac-Me}_2\text{Si}(2\text{-MeInd})_2\text{ZrMe}_2$ activated with N,N-dimethylanilinium tetrakis(pentafluorophenyl)boron and or triphenylcarbonium tetrakis(pentafluorophenyl)boron;

(9) $\text{Me}_2\text{Si}(\text{Me}_4\text{C}_5)(\text{N-t-butyl})\text{TiCl}_2$ and $\text{rac-Me}_2\text{Si}(2\text{-Me-4-PhInd})_2\text{ZrCl}_2$ activated with an alumoxane;

(10) $\text{Me}_2\text{Si}(\text{Me}_4\text{C}_5)(\text{N-t-butyl})\text{TiMe}_2$ and $\text{rac-Me}_2\text{Si}(2\text{-Me-4-PhInd})_2\text{ZrMe}_2$ activated with a non-coordinating anion activator;

(10a) $\text{Me}_2\text{Si}(\text{Me}_4\text{C}_5)(\text{N-t-butyl})\text{TiMe}_2$ and $\text{rac-Me}_2\text{Si}(2\text{-Me-4-PhInd})_2\text{ZrMe}_2$ activated with N,N-dimethylanilinium tetrakis(pentafluorophenyl)boron and or triphenylcarbonium tetrakis(pentafluorophenyl)boron;

(11) $\text{Me}_2\text{Si}(\text{Me}_4\text{C}_5)(\text{N-t-butyl})\text{TiCl}_2$ and $\text{rac-Me}_2\text{Si}(2\text{-MeInd})$ activated with an alumoxane;

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(12) $\text{Me}_2\text{Si}(\text{Me}_4\text{C}_5)(\text{N-t-butyl})\text{TiMe}_2$ and $\text{rac-Me}_2\text{Si}(2\text{-MeInd})_2\text{ZrMe}_2$ activated with a non-coordinating anion activator;

(12a) $\text{Me}_2\text{Si}(\text{Me}_4\text{C}_5)(\text{N-t-butyl})\text{TiMe}_2$ and $\text{rac-Me}_2\text{Si}(2\text{-MeInd})_2\text{ZrMe}_2$ activated with N,N-dimethylanilinium tetrakis(pentafluorophenyl)boron and or triphenylcarbonium tetrakis(pentafluorophenyl)boron;

(13) $\text{Me}_2\text{Si}(\text{Me}_4\text{C}_5)(\text{N-exo-norbornyl})\text{TiCl}_2$ and $\text{rac-Me}_2\text{Si}(2\text{-Me-4-PhInd})_2\text{ZrCl}_2$ activated with an alumoxane;

(14) $\text{Me}_2\text{Si}(\text{Me}_4\text{C}_5)(\text{N-exo-norbornyl})\text{TiMe}_2$ and $\text{rac-Me}_2\text{Si}(2\text{-Me-4-PhInd})_2\text{ZrMe}_2$ activated with a non-coordinating anion activator;

(14a) $\text{Me}_2\text{Si}(\text{Me}_4\text{C}_5)(\text{N-exo-norbornyl})\text{TiMe}_2$ and $\text{rac-Me}_2\text{Si}(2\text{-Me-4-PhInd})_2\text{ZrMe}_2$ activated with N,N-dimethylanilinium tetrakis(pentafluorophenyl)boron and or triphenylcarbonium tetrakis(pentafluorophenyl)boron;

(15) $\text{Me}_2\text{Si}(\text{Me}_4\text{C}_5)(\text{N-exo-norbornyl})\text{TiCl}_2$ and $\text{rac-Me}_2\text{Si}(2\text{-MeInd})_2\text{ZrCl}_2$ activated with an alumoxane;

(16) $\text{Me}_2\text{Si}(\text{Me}_4\text{C}_5)(\text{N-exo-norbornyl})\text{TiMe}_2$ and $\text{rac-Me}_2\text{Si}(2\text{-MeInd})_2\text{ZrMe}_2$ activated with a non-coordinating anion activator;

(16a) $\text{Me}_2\text{Si}(\text{Me}_4\text{C}_5)(\text{N-exo-norbornyl})\text{TiMe}_2$ and $\text{rac-Me}_2\text{Si}(2\text{-MeInd})_2\text{ZrMe}_2$ activated with N,N-dimethylanilinium tetrakis(pentafluorophenyl)boron and or triphenylcarbonium tetrakis(pentafluorophenyl)boron;

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(17) $(p\text{-Et}_3\text{SiPh})_2\text{C}(\text{Cp})(3,8\text{-di-}t\text{-BuFlu})\text{HfCl}_2$ and $\text{rac-Me}_2\text{Si}(2\text{-Me-4-PhInd})_2\text{ZrCl}_2$
activated with an alumoxane;

(18) $(p\text{-Et}_3\text{SiPh})_2\text{C}(\text{Cp})(3,8\text{-di-}t\text{-BuFlu})\text{HfMe}_2$ and $\text{rac-Me}_2\text{Si}(2\text{-Me-4-PhInd})_2\text{ZrMe}_2$
activated with a non-coordinating anion activator;

(18a) $(p\text{-Et}_3\text{SiPh})_2\text{C}(\text{Cp})(3,8\text{-di-}t\text{-BuFlu})\text{HfMe}_2$ and $\text{rac-Me}_2\text{Si}(2\text{-Me-4-PhInd})_2\text{ZrMe}_2$
activated with N,N-dimethylanilinium tetrakis(pentafluorophenyl)boron and or
triphenylcarbonium tetrakis(pentafluorophenyl)boron;

(19) $(p\text{-Et}_3\text{SiPh})_2\text{C}(\text{Cp})(3,8\text{-di-}t\text{-BuFlu})\text{HfCl}_2$ and $\text{rac-Me}_2\text{Si}(2\text{-MeInd})_2\text{ZrCl}_2$
activated with an alumoxane;

(20) $(p\text{-Et}_3\text{SiPh})_2\text{C}(\text{Cp})(3,8\text{-di-}t\text{-BuFlu})\text{HfMe}_2$ and $\text{rac-Me}_2\text{Si}(2\text{-MeInd})_2\text{ZrMe}_2$
activated with a non-coordinating anion activator;

(20a) $(p\text{-Et}_3\text{SiPh})_2\text{C}(\text{Cp})(3,8\text{-di-}t\text{-BuFlu})\text{HfMe}_2$ and $\text{rac-Me}_2\text{Si}(2\text{-MeInd})_2\text{ZrMe}_2$
activated with N,N-dimethylanilinium tetrakis(pentafluorophenyl)boron and or
triphenylcarbonium tetrakis(pentafluorophenyl)boron;

(21) $\text{meso-CH}_2\text{CH}_2(\text{Ind})_2\text{ZrCl}_2$ and $\text{rac-Me}_2\text{Si}(\text{H}_4\text{Ind})_2\text{ZrCl}_2$ activated with an
alumoxane;

(22) $\text{meso-CH}_2\text{CH}_2(\text{Ind})_2\text{ZrMe}_2$ and $\text{rac-Me}_2\text{Si}(\text{H}_4\text{Ind})_2\text{ZrMe}_2$ activated with a non-
coordinating anion activator;

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(22a) meso-CH₂CH₂(Ind)₂ZrMe₂ and rac-Me₂Si(H₄Ind)₂ZrMe₂ activated with N,N-dimethylanilinium tetrakis(pentafluorophenyl)boron and or triphenylcarbonium tetrakis(pentafluorophenyl)boron;

(23) meso-CH₂CH₂(Ind)₂ZrCl₂ and rac-Me₂Si(2-MeInd)₂ZrCl₂ activated with an alumoxane;

(24) meso-CH₂CH₂(Ind)₂ZrMe₂ and rac-Me₂Si(2-MeInd)₂ZrMe₂ activated with a non-coordinating anion activator;

(24a) meso-CH₂CH₂(Ind)₂ZrMe₂ and rac-Me₂Si(2-MeInd)₂ZrMe₂ activated with N,N-dimethylanilinium tetrakis(pentafluorophenyl)boron and or triphenylcarbonium tetrakis(pentafluorophenyl)boron;

(25) meso-Me₂Si(Ind)₂ZrCl₂ and rac-Me₂Si(H₄Ind)₂ZrCl₂ activated with an alumoxane;

(26) meso-Me₂Si(Ind)₂ZrMe₂ and rac-Me₂Si(H₄Ind)₂ZrMe₂ activated with a non-coordinating anion activator;

(26a) meso-Me₂Si(Ind)₂ZrMe₂ and rac-Me₂Si(H₄Ind)₂ZrMe₂ activated with N,N-dimethylanilinium tetrakis(pentafluorophenyl)boron and or triphenylcarbonium tetrakis(pentafluorophenyl)boron;

(27) meso-Me₂Si(Ind)₂ZrCl₂ and rac-Me₂Si(2-MeInd)₂ZrCl₂ activated with an alumoxane;

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(28) meso-Me₂Si(Ind)₂ZrMe₂ and rac-Me₂Si(2-MeInd)₂ZrMe₂ activated with a non-coordinating anion activator;

(28a) meso-Me₂Si(Ind)₂ZrMe₂ and rac-Me₂Si(2-MeInd)₂ZrMe₂ activated with N,N-dimethylanilinium tetrakis(pentafluorophenyl)boron and or triphenylcarbonium tetrakis(pentafluorophenyl)boron;

(29) meso-Me₂Si(2-MeInd)₂ZrCl₂ and rac-Me₂Si(2-Me-4-PhInd)₂ZrCl₂ activated with an alumoxane;

(30) meso-Me₂Si(2-MeInd)₂ZrMe₂ and rac-Me₂Si(2-Me-4-PhInd)₂ZrMe₂ activated with a non-coordinating anion activator;

(30a) meso-Me₂Si(2-MeInd)₂ZrMe₂ and rac-Me₂Si(2-Me-4-PhInd)₂ZrMe₂ activated with N,N-dimethylanilinium tetrakis(pentafluorophenyl)boron and or triphenylcarbonium tetrakis(pentafluorophenyl)boron;

(31) meso-Me₂Si(2-MeInd)₂ZrCl₂ and rac-Me₂Si(2-MeInd)₂ZrCl₂ activated with an alumoxane;

(32) meso-Me₂Si(2-MeInd)₂ZrMe₂ and rac-Me₂Si(2-MeInd)₂ZrMe₂ activated with a non-coordinating anion activator;

(32a) meso-Me₂Si(2-MeInd)₂ZrMe₂ and rac-Me₂Si(2-MeInd)₂ZrMe₂ activated with N,N-dimethylanilinium tetrakis(pentafluorophenyl)boron and or triphenylcarbonium tetrakis(pentafluorophenyl)boron;

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(33) meso-CH₂CH₂(2-MeInd)₂ZrCl₂ and rac-Me₂Si(2-Me-4-PhInd)₂ZrCl₂ activated with an alumoxane;

(34) meso-CH₂CH₂(2-MeInd)₂ZrMe₂ and rac-Me₂Si(2-Me-4-PhInd)₂ZrMe₂ activated with a non-coordinating anion activator;

(34a) meso-CH₂CH₂(2-MeInd)₂ZrMe₂ and rac-Me₂Si(2-Me-4-PhInd)₂ZrMe₂ activated with N,N-dimethylanilinium tetrakis(pentafluorophenyl)boron and or triphenylcarbonium tetrakis(pentafluorophenyl)boron;

(35) meso-CH₂CH₂(2-MeInd)₂ZrCl₂ and rac-Me₂Si(2-MeInd)₂ZrCl₂ activated with an alumoxane;

(36) meso-CH₂CH₂(2-MeInd)₂ZrMe₂ and rac-Me₂Si(2-MeInd)₂ZrMe₂ activated with a non-coordinating anion activator;

(36a) meso-CH₂CH₂(2-MeInd)₂ZrMe₂ and rac-Me₂Si(2-MeInd)₂ZrMe₂ activated with N,N-dimethylanilinium tetrakis(pentafluorophenyl)boron and or triphenylcarbonium tetrakis(pentafluorophenyl)boron;

(37) meso-Me₂Si(2-Me-4-PhInd)₂ZrCl₂ and rac-Me₂Si(2-Me-4-PhInd)₂ZrCl₂ activated with an alumoxane;

(38) meso-Me₂Si(2-Me-4-PhInd)₂ZrMe₂ and rac-Me₂Si(2-Me-4-PhInd)₂ZrMe₂ activated with a non-coordinating anion activator;

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(38a) meso-Me₂Si(2-Me-4-PhInd)₂ZrMe₂ and rac-Me₂Si(2-Me-4-PhInd)₂ZrMe₂ activated with N,N-dimethylanilinium tetrakis(pentafluorophenyl)boron and or triphenylcarbonium tetrakis(pentafluorophenyl)boron;

(39) meso-CH₂CH₂(2-Me-4-PhInd)₂ZrCl₂ and rac-CH₂CH₂(2-Me-4-PhInd)₂ZrCl₂ activated with an alumoxane;

(40) meso-CH₂CH₂(2-Me-4-PhInd)₂ZrMe₂ and rac-CH₂CH₂(2-Me-4-PhInd)₂ZrMe₂ activated with a non-coordinating anion activator;

(40a) meso-CH₂CH₂(2-Me-4-PhInd)₂ZrMe₂ and rac-CH₂CH₂(2-Me-4-PhInd)₂ZrMe₂ activated with N,N-dimethylanilinium tetrakis(pentafluorophenyl)boron and or triphenylcarbonium tetrakis(pentafluorophenyl)boron;

(41) meso-CH₂CH₂(2-MeInd)₂ZrCl₂ and rac-CH₂CH₂(2-MePhInd)₂ZrCl₂ activated with an alumoxane;

(42) meso-CH₂CH₂(2-MeInd)₂ZrMe₂ and rac-CH₂CH₂(2-MeInd)₂ZrMe₂ activated with a non-coordinating anion activator;

(42a) meso-CH₂CH₂(2-MeInd)₂ZrMe₂ and rac-CH₂CH₂(2-MeInd)₂ZrMe₂ activated with N,N-dimethylanilinium tetrakis(pentafluorophenyl)boron and or triphenylcarbonium tetrakis(pentafluorophenyl)boron;

(43) meso-CH₂CH₂(Ind)₂ZrCl₂ and rac-CH₂CH₂(Ind)₂ZrCl₂ activated with an alumoxane;

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(44) meso-CH₂CH₂(Ind)₂ZrMe₂ and rac-CH₂CH₂(Ind)₂ZrMe₂ activated with a non-coordinating anion activator;

(44a) meso-CH₂CH₂(Ind)₂ZrMe₂ and rac-CH₂CH₂(Ind)₂ZrMe₂ activated with N,N-dimethylanilinium tetrakis(pentafluorophenyl)boron and or triphenylcarbonium tetrakis(pentafluorophenyl)boron;

(45) meso-Me₂Si(Ind)₂ZrCl₂ and rac-Me₂Si(Ind)₂ZrCl₂ activated with an alumoxane;

(46) meso-Me₂Si(Ind)₂ZrMe₂ and rac-Me₂Si(Ind)₂ZrMe₂ activated with a non-coordinating anion activator;

(46a) meso-Me₂Si(Ind)₂ZrMe₂ and rac-Me₂Si(Ind)₂ZrMe₂ activated with N,N-dimethylanilinium tetrakis(pentafluorophenyl)boron and or triphenylcarbonium tetrakis(pentafluorophenyl)boron;

(47) meso-CH₂CH₂(Ind)₂ZrCl₂ and rac-CH₂CH₂(4,7-Me₂Ind)₂ZrCl₂ (4,7-Me₂Ind = 4,7-dimethylindenyl) activated with an alumoxane;

(48) meso-CH₂CH₂(Ind)₂ZrMe₂ and rac-CH₂CH₂(4,7-Me₂Ind)₂ZrMe₂ activated with a non-coordinating anion activator;

(48a) meso-CH₂CH₂(Ind)₂ZrMe₂ and rac-CH₂CH₂(4,7-Me₂Ind)₂ZrMe₂ activated with N,N-dimethylanilinium tetrakis(pentafluorophenyl)boron and or triphenylcarbonium tetrakis(pentafluorophenyl)boron;

(49) meso-Me₂Si(Ind)₂ZrCl₂ and rac-CH₂CH₂(4,7-Me₂Ind)₂ZrCl₂ activated with an alumoxane;

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(50) meso-Me₂Si(Ind)₂ZrMe₂ and rac-CH₂CH₂(4,7-Me₂Ind)₂ZrMe₂ activated with a non-coordinating anion activator;

(50a) meso-Me₂Si(Ind)₂ZrMe₂ and rac-CH₂CH₂(4,7-Me₂Ind)₂ZrMe₂ activated with N,N-dimethylanilinium tetrakis(pentafluorophenyl)boron and or triphenylcarbonium tetrakis(pentafluorophenyl)boron;

(51) meso-CH₂CH₂(2-MeInd)₂ZrCl₂ and rac-CH₂CH₂(4,7-Me₂Ind)₂ZrCl₂ (4,7-Me₂Ind = 4,7-dimethylindenyl) activated with an alumoxane;

(52) meso-CH₂CH₂(2-MeInd)₂ZrMe₂ and rac-CH₂CH₂(4,7-Me₂Ind)₂ZrMe₂ activated with a non-coordinating anion activator;

(52a) meso-CH₂CH₂(2-MeInd)₂ZrMe₂ and rac-CH₂CH₂(4,7-Me₂Ind)₂ZrMe₂ activated with N,N-dimethylanilinium tetrakis(pentafluorophenyl)boron and or triphenylcarbonium tetrakis(pentafluorophenyl)boron;

(53) meso-Me₂Si(2-MeInd)₂ZrCl₂ and rac-CH₂CH₂(4,7-Me₂Ind)₂ZrCl₂ activated with an alumoxane;

(54) meso-Me₂Si(2-MeInd)₂ZrMe₂ and rac-CH₂CH₂(4,7-Me₂Ind)₂ZrMe₂ activated with a non-coordinating anion activator; or

(54a) meso-Me₂Si(2-MeInd)₂ZrMe₂ and rac-CH₂CH₂(4,7-Me₂Ind)₂ZrMe₂ activated with N,N-dimethylanilinium tetrakis(pentafluorophenyl)boron and or triphenylcarbonium tetrakis(pentafluorophenyl)boron.

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46. (currently amended) The process of claim 1 wherein:

- 1) the first catalyst component is capable of producing a polymer having an Mw weight average molecular weight of 80,000 or less and a crystallinity of 15% or less under selected polymerization conditions;
- 2) the a second catalyst component is capable of producing polymer having an Mw weight average molecular weight of 80,000 or less and a crystallinity of 50% or more at the selected polymerization conditions;
- 3) the temperature in the reaction zones is greater than 105°C;
- 4) the residence time in the reaction zones is 10 minutes or less;
- 5) the ratio of the first catalyst to the second catalyst is from 1:1 to 20:1;
- 6) wherein the activity of the catalyst components is at least 100 kilograms of polymer per gram of the catalyst ~~compounds~~ components; and wherein at least 80% of the olefins are converted to polymer.

47. (original) The process of claim 46 wherein:

- a) the olefins comprise propylene and one or more of butene, pentene, hexene, heptene, octene, nonene, decene, dodecene; and
- b) the temperature is greater than 110°C; and
- c) the residence time is 5 minutes or less; and
- d) the ratio of the first catalyst to the second catalyst is from 1:1 to 1:10.

48. (original) The process of claim 1 wherein the step of recovering a branched olefin polymer comprising at least 50 mole% of one or more C3 to C40 olefins comprises:

- 1) withdrawing polymer solution from the reaction zone;
- 2) removing at least 10% solvent from the polymer solution;
- 3) quenching the reaction;
- 4) devolatilizing the polymer solution to form molten polymer;

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- 5) combining the molten polymer and one or more additives in a static mixer;
- 6) removing the polymer combination from the static mixer; and
- 7) pelletizing or drumming the polymer combination.

49. (original) The process of claim 48 wherein the additives in step 5) comprise nucleating agent.

50. (original) The process of claim 1 wherein the second catalyst component comprises one or more of:

dimethylsiladiyl(2-methyl, 4-[3',5'-di-*t*-butylphenyl]indenyl)₂zirconium dichloride;
dimethylsiladiyl(2-ethyl, 4-[3',5'-di-*t*-butylphenyl]indenyl)₂zirconium dichloride;
dimethylsiladiyl(2-*n*-propyl, 4-[3',5'-di-*t*-butylphenyl]indenyl)₂zirconium dichloride;
dimethylsiladiyl(2-iso-propyl, 4-[3',5'-di-*t*-butylphenyl]indenyl)₂zirconium dichloride;
dimethylsiladiyl(2-*n*-butyl, 4-[3',5'-di-*t*-butylphenyl]indenyl)₂zirconium dichloride;
dimethylsiladiyl(2-iso-butyl, 4-[3',5'-di-*t*-butylphenyl]indenyl)₂zirconium dichloride;
dimethylsiladiyl(2-sec-butyl, 4-[3',5'-di-*t*-butylphenyl]indenyl)₂zirconium dichloride;
dimethylsiladiyl(2-tert-butyl, 4-[3',5'-di-*t*-butylphenyl]indenyl)₂zirconium dichloride;
dimethylsiladiyl(2-methyl, 4-[3',5'-di-*t*-butylphenyl]indenyl)₂hafnium dichloride;
dimethylsiladiyl(2-ethyl, 4-[3',5'-di-*t*-butylphenyl]indenyl)₂hafnium dichloride;
dimethylsiladiyl(2-*n*-propyl, 4-[3',5'-di-*t*-butylphenyl]indenyl)₂hafnium
dimethylsiladiyl(2-iso-propyl, 4-[3',5'-di-*t*-butylphenyl]indenyl)₂hafnium dichloride;
dimethylsiladiyl(2-butyl, 4-[3',5'-di-*t*-butylphenyl]indenyl)₂hafnium dichloride;
9-silafluorendiyl(2-methyl, 4-[3',5'-di-*t*-butylphenyl]indenyl)₂zirconium dichloride;
9-silafluorendiyl(2-ethyl, 4-[3',5'-di-*t*-butylphenyl]indenyl)₂zirconium dichloride;
9-silafluorendiyl(2-*n*-propyl, 4-[3',5'-di-*t*-butylphenyl]indenyl)₂zirconium dichloride;
9-silafluorendiyl(2-iso-propyl, 4-[3',5'-di-*t*-butylphenyl]indenyl)₂zirconium dichloride;
9-silafluorendiyl(2-*n*-butyl, 4-[3',5'-di-*t*-butylphenyl]indenyl)₂zirconium dichloride;

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9-silafluorendiyl(2-iso-butyl, 4-[3',5'-di-tbutylphenyl]indenyl)₂zirconium dichloride;
9-silafluorendiyl(2-sec-butyl, 4-[3',5'-di-tbutylphenyl]indenyl)₂zirconium dichloride;
9-silafluorendiyl(2-tert-butyl, 4-[3',5'-di-tbutylphenyl]indenyl)₂zirconium dichloride;
9-silafluorendiyl(2-methyl, 4-[3',5'-di-tbutylphenyl]indenyl)₂hafnium dichloride;
9-silafluorendiyl(2-ethyl, 4-[3',5'-di-tbutylphenyl]indenyl)₂hafnium dichloride;
9-silafluorendiyl(2-n-propyl, 4-[3',5'-di-tbutylphenyl]indenyl)₂hafnium dichloride;
9-silafluorendiyl(2-iso-propyl, 4-[3',5'-di-tbutylphenyl]indenyl)₂hafnium dichloride;
9-silafluorendiyl(2-n-butyl, 4-[3',5'-di-tbutylphenyl]indenyl)₂hafnium dichloride;
9-silafluorendiyl(2-iso-butyl, 4-[3',5'-di-tbutylphenyl]indenyl)₂hafnium dichloride;
9-silafluorendiyl(2-sec-butyl, 4-[3',5'-di-tbutylphenyl]indenyl)₂hafnium dichloride;
9-silafluorendiyl(2-tert-butyl, 4-[3',5'-di-tbutylphenyl]indenyl)₂hafnium dichloride;
dimethylsiladiyl(2-methyl, 4-[3',5'-di-tbutylphenyl]indenyl)₂zirconium dimethyl;
dimethylsiladiyl(2-ethyl, 4-[3',5'-di-tbutylphenyl]indenyl)₂zirconium dimethyl;
dimethylsiladiyl(2-n-propyl, 4-[3',5'-di-tbutylphenyl]indenyl)₂zirconium dimethyl;
dimethylsiladiyl(2-iso-propyl, 4-[3',5'-di-tbutylphenyl]indenyl)₂zirconium dimethyl;
dimethylsiladiyl(2-n-butyl, 4-[3',5'-di-tbutylphenyl]indenyl)₂zirconium dimethyl;
dimethylsiladiyl(2-iso-butyl, 4-[3',5'-di-tbutylphenyl]indenyl)₂zirconium dimethyl;
dimethylsiladiyl(2-sec-butyl, 4-[3',5'-di-tbutylphenyl]indenyl)₂zirconium dimethyl;
dimethylsiladiyl(2-tert-butyl, 4-[3',5'-di-tbutylphenyl]indenyl)₂zirconium dimethyl;
dimethylsiladiyl(2-methyl, 4-[3',5'-di-tbutylphenyl]indenyl)₂hafnium dimethyl;
dimethylsiladiyl(2-ethyl, 4-[3',5'-di-tbutylphenyl]indenyl)₂hafnium dimethyl;
dimethylsiladiyl(2-n-propyl, 4-[3',5'-di-tbutylphenyl]indenyl)₂hafnium dimethyl;
dimethylsiladiyl(2-iso-propyl, 4-[3',5'-di-tbutylphenyl]indenyl)₂hafnium dimethyl;
dimethylsiladiyl(2-n-butyl, 4-[3',5'-di-tbutylphenyl]indenyl)₂hafnium dimethyl;
dimethylsiladiyl(2-iso-butyl, 4-[3',5'-di-tbutylphenyl]indenyl)₂hafnium dimethyl;
dimethylsiladiyl(2-sec-butyl, 4-[3',5'-di-tbutylphenyl]indenyl)₂hafnium dimethyl;
dimethylsiladiyl(2-tert-butyl, 4-[3',5'-di-tbutylphenyl]indenyl)₂hafnium dimethyl;
9-silafluorendiyl(2-methyl, 4-[3',5'-di-tbutylphenyl]indenyl)₂zirconium dimethyl;

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9-silafluorendiyl(2-ethyl, 4-[3',5'-di-tbutylphenyl]indenyl)₂zirconium dimethyl;
9-silafluorendiyl(2-n-propyl, 4-[3',5'-di-tbutylphenyl]indenyl)₂zirconium dimethyl;
9-silafluorendiyl(2-iso-propyl, 4-[3',5'-di-tbutylphenyl]indenyl)₂zirconium dimethyl;
9-silafluorendiyl(2-n-butyl, 4-[3',5'-di-tbutylphenyl]indenyl)₂zirconium dimethyl;
9-silafluorendiyl(2-iso-butyl, 4-[3',5'-di-tbutylphenyl]indenyl)₂zirconium dimethyl;
9-silafluorendiyl(2-sec-butyl, 4-[3',5'-di-tbutylphenyl]indenyl)₂zirconium dimethyl;
9-silafluorendiyl(2-tert-butyl, 4-[3',5'-di-tbutylphenyl]indenyl)₂zirconium dimethyl;
9-silafluorendiyl(2-methyl, 4-[3',5'-di-tbutylphenyl]indenyl)₂hafnium dimethyl;
9-silafluorendiyl(2-ethyl, 4-[3',5'-di-tbutylphenyl]indenyl)₂hafnium dimethyl;
9-silafluorendiyl(2-n-propyl, 4-[3',5'-di-tbutylphenyl]indenyl)₂hafnium dimethyl;
9-silafluorendiyl(2-iso-propyl, 4-[3',5'-di-tbutylphenyl]indenyl)₂hafnium dimethyl;
9-silafluorendiyl(2-n-butyl, 4-[3',5'-di-tbutylphenyl]indenyl)₂hafnium dimethyl;
9-silafluorendiyl(2-iso-butyl, 4-[3',5'-di-tbutylphenyl]indenyl)₂hafnium dimethyl;
9-silafluorendiyl(2-sec-butyl, 4-[3',5'-di-tbutylphenyl]indenyl)₂hafnium dimethyl;
9-silafluorendiyl(2-tert-butyl, 4-[3',5'-di-tbutylphenyl]indenyl)₂hafnium dimethyl;
dimethylsiladiyl(2-methyl, 4-[3',5'-bis-trifluoromethylphenyl]indenyl)₂zirconium
dichloride;
dimethylsiladiyl(2-ethyl, 4-[3',5'-bis-trifluoromethylphenyl]indenyl)₂zirconium
dichloride;
dimethylsiladiyl(2-n-propyl, 4-[3',5'-bis-trifluoromethylphenyl]indenyl)₂zirconium
dichloride;
dimethylsiladiyl(2-iso-propyl, 4-[3',5'-bis-trifluoromethylphenyl]indenyl)₂zirconium
dichloride;
dimethylsiladiyl(2-n-butyl, 4-[3',5'-bis-trifluoromethylphenyl]indenyl)₂zirconium
dichloride;
dimethylsiladiyl(2-iso-butyl, 4-[3',5'-bis-trifluoromethylphenyl]indenyl)₂zirconium
dichloride;

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dimethylsiladiyl(2-sec-butyl, 4-[3',5'-bis-trifluoromethylphenyl]indenyl)₂zirconium
dichloride;

dimethylsiladiyl(2-tert-butyl, 4-[3',5'-bis-trifluoromethylphenyl]indenyl)₂zirconium
dichloride;

dimethylsiladiyl(2-methyl, 4-[3',5'-bis-trifluoromethylphenyl]indenyl)₂hafnium
dichloride;

dimethylsiladiyl(2-ethyl, 4-[3',5'-bis-trifluoromethylphenyl]indenyl)₂hafnium
dichloride;

dimethylsiladiyl(2-n-propyl, 4-[3',5'-bis- trifluoromethylphenyl]indenyl)₂hafnium
dichloride;

dimethylsiladiyl(2-iso-propyl, 4-[3',5'-bis- trifluoromethylphenyl]indenyl)₂hafnium
dichloride;

dimethylsiladiyl(2-n-butyl, 4-[3',5'-bis- trifluoromethylphenyl]indenyl)₂hafnium
dichloride;

dimethylsiladiyl(2-iso-butyl, 4-[3',5'-bis- trifluoromethylphenyl]indenyl)₂hafnium
dichloride;

dimethylsiladiyl(2-sec-butyl, 4-[3',5'-bis- trifluoromethylphenyl]indenyl)₂hafnium
dichloride;

dimethylsiladiyl(2-tert-butyl, 4-[3',5'-bis- trifluoromethylphenyl]indenyl)₂hafnium
dichloride;

9-silafluorendiyl(2-methyl, 4-[3',5'-bis-trifluoromethylphenyl]indenyl)₂zirconium
dichloride;

dimethylsiladiyl(2-ethyl, 4-[3',5'-bis- trifluoromethylphenyl]indenyl)₂hafnium
dichloride;

9-silafluorendiyl(2-n-propyl, 4-[3',5'-bis- trifluoromethylphenyl]indenyl)₂zirconium
dichloride;

9-silafluorendiyl(2-iso-propyl, 4-[3',5'-bis- trifluoromethylphenyl]indenyl)₂zirconium
dichloride;

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9-silafluorendiyl(2-n-butyl, 4-[3',5'-bis- trifluoromethylphenyl]indenyl)₂zirconium dichloride;
9-silafluorendiyl(2-iso-butyl, 4-[3',5'-bis- trifluoromethylphenyl]indenyl)₂zirconium dichloride;
9-silafluorendiyl(2-sec-butyl, 4-[3',5'-bis- trifluoromethylphenyl]indenyl)₂zirconium dichloride;
9-silafluorendiyl(2-tert-butyl, 4-[3',5'-bis- trifluoromethylphenyl]indenyl)₂zirconium dichloride;
9-silafluorendiyl(2-methyl, 4-[3',5'-bis-trifluoromethylphenyl]indenyl)₂hafnium dichloride;
9-silafluorendiyl(2-ethyl, 4-[3',5'-bis-trifluoromethylphenyl]indenyl)₂hafnium dichloride;
9-silafluorendiyl(2-n-propyl, 4-[3',5'-bis- trifluoromethylphenyl]indenyl)₂ hafnium dichloride;
9-silafluorendiyl(2-iso-propyl, 4-[3',5'-bis- trifluoromethylphenyl]indenyl)₂ hafnium dichloride;
9-silafluorendiyl(2-n-butyl, 4-[3',5'-bis-trifluoromethylphenyl]indenyl)₂hafnium dichloride;
9-silafluorendiyl(2-iso-butyl, 4-[3',5'-bis-trifluoromethylphenyl]indenyl)₂hafnium dichloride;
9-silafluorendiyl(2-sec-butyl, 4-[3',5'-bis-trifluoromethylphenyl]indenyl)₂hafnium dichloride;
9-silafluorendiyl(2-tert-butyl, 4-[3',5'-bis-trifluoromethylphenyl]indenyl)₂hafnium dichloride;
dimethylsiladiyl(2-methyl, 4-[3',5'-bis-trifluoromethylphenyl]indenyl)₂zirconium dimethyl;
dimethylsiladiyl(2-ethyl, 4-[3',5'-bis-trifluoromethylphenyl]indenyl)₂zirconium dimethyl;

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dimethylsiladiyl(2-n-propyl, 4-[3',5'-bis-trifluoromethylphenyl]indenyl)₂zirconium
dimethyl;
dimethylsiladiyl(2-iso-propyl, 4-[3',5'-bis- trifluoromethylphenyl]indenyl)₂zirconium
dimethyl;
dimethylsiladiyl(2-n-butyl, 4-[3',5'-bis-trifluoromethylphenyl]indenyl)₂zirconium
dimethyl;
dimethylsiladiyl(2-iso-butyl, 4-[3',5'-bis-trifluoromethylphenyl]indenyl)₂zirconium
dimethyl;
dimethylsiladiyl(2-sec-butyl, 4-[3',5'-bis-trifluoromethylphenyl]indenyl)₂zirconium
dimethyl;
dimethylsiladiyl(2-tert-butyl, 4-[3',5'-bis-trifluoromethylphenyl]indenyl)₂zirconium
dimethyl;
dimethylsiladiyl(2-methyl, 4-[3',5'-bis-trifluoromethylphenyl]indenyl)₂hafnium
dimethyl;
dimethylsiladiyl(2-ethyl, 4-[3',5'-bis-trifluoromethylphenyl]indenyl)₂hafnium
dimethyl;
dimethylsiladiyl(2-n-propyl, 4-[3',5'-bis- trifluoromethylphenyl]indenyl)₂hafnium
dimethyl;
dimethylsiladiyl(2-iso-propyl, 4-[3',5'-bis- trifluoromethylphenyl]indenyl)₂hafnium
dimethyl;
dimethylsiladiyl(2-n-butyl, 4-[3',5'-bis- trifluoromethylphenyl]indenyl)₂hafnium
dimethyl;
dimethylsiladiyl(2-iso-butyl, 4-[3',5'-bis- trifluoromethylphenyl]indenyl)₂hafnium
dimethyl;
dimethylsiladiyl(2-sec-butyl, 4-[3',5'-bis- trifluoromethylphenyl]indenyl)₂hafnium
dimethyl;
dimethylsiladiyl(2-tert-butyl, 4-[3',5'-bis- trifluoromethylphenyl]indenyl)₂hafnium
dimethyl;

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9-silafluorendiyl(2-methyl, 4-[3',5'-bis-trifluoromethylphenyl]indenyl)₂zirconium dimethyl;

dimethylsiladiyl(2-ethyl, 4-[3',5'-bis- trifluoromethylphenyl]indenyl)₂hafnium dimethyl;

9-silafluorendiyl(2-n-propyl, 4-[3',5'-bis- trifluoromethylphenyl]indenyl)₂zirconium dimethyl;

9-silafluorendiyl(2-iso-propyl, 4-[3',5'-bis- trifluoromethylphenyl]indenyl)₂zirconium dimethyl;

9-silafluorendiyl(2-n-butyl, 4-[3',5'-bis- trifluoromethylphenyl]indenyl)₂zirconium dimethyl;

9-silafluorendiyl(2-iso-butyl, 4-[3',5'-bis- trifluoromethylphenyl]indenyl)₂zirconium dimethyl;

9-silafluorendiyl(2-sec-butyl, 4-[3',5'-bis- trifluoromethylphenyl]indenyl)₂zirconium dimethyl;

9-silafluorendiyl(2-tert-butyl, 4-[3',5'-bis- trifluoromethylphenyl]indenyl)₂zirconium dimethyl;

9-silafluorendiyl(2-methyl, 4-[3',5'-bis-trifluoromethylphenyl]indenyl)₂hafnium dimethyl;

9-silafluorendiyl(2-ethyl, 4-[3',5'-bis-trifluoromethylphenyl]indenyl)₂hafnium dimethyl;

9-silafluorendiyl(2-n-propyl, 4-[3',5'-bis- trifluoromethylphenyl]indenyl)₂ hafnium dimethyl;

9-silafluorendiyl(2-iso-propyl, 4-[3',5'-bis- trifluoromethylphenyl]indenyl)₂ hafnium dimethyl;

9-silafluorendiyl(2-n-butyl, 4-[3',5'-bis-trifluoromethylphenyl]indenyl)₂hafnium dimethyl;

9-silafluorendiyl(2-iso-butyl, 4-[3',5'-bis-trifluoromethylphenyl]indenyl)₂hafnium dimethyl;

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9-silafluorendiyl(2-sec-butyl, 4-[3',5'-bis-trifluoromethylphenyl]indenyl)₂hafnium dimethyl;
9-silafluorendiyl(2-tert-butyl, 4-[3',5'-bis-trifluoromethylphenyl]indenyl)₂hafnium dimethyl;
dimethylsiladiyl(2-ethyl, 4-[3',5'-di-iso-propylphenyl]indenyl)₂zirconium dichloride;
dimethylsiladiyl(2-n-propyl, 4-[3',5'-di-iso-propylphenyl]indenyl)₂zirconium dichloride
dimethylsiladiyl(2-iso-propyl, 4-[3',5'-di-iso-propylphenyl]indenyl)₂zirconium dichloride;
dimethylsiladiyl(2-n-butyl, 4-[3',5'-di-iso-propylphenyl]indenyl)₂zirconium dichloride;
dimethylsiladiyl(2-iso-butyl, 4-[3',5'-di-iso-propylphenyl]indenyl)₂zirconium dichloride;
dimethylsiladiyl(2-sec-butyl, 4-[3',5'-di-iso-propylphenyl]indenyl)₂zirconium dichloride;
dimethylsiladiyl(2-tert-butyl, 4-[3',5'-di-iso-propylphenyl]indenyl)₂zirconium dichloride;
dimethylsiladiyl(2-ethyl, 4-[3',5'-di-iso-propylphenyl]indenyl)₂hafnium dichloride;
dimethylsiladiyl(2-n-propyl, 4-[3',5'-di-iso-propylphenyl]indenyl)₂hafnium dichloride;
dimethylsiladiyl(2-iso-propyl, 4-[3',5'-di-iso-propylphenyl]indenyl)₂hafnium dichloride;
dimethylsiladiyl(2-n-butyl, 4-[3',5'-di-iso-propylphenyl]indenyl)₂hafnium dichloride;
dimethylsiladiyl(2-iso-butyl, 4-[3',5'-di-iso-propylphenyl]indenyl)₂hafnium dichloride;
dimethylsiladiyl(2-sec-butyl, 4-[3',5'-di-iso-propylphenyl]indenyl)₂hafnium dichloride;

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dimethylsiladiyl(2-tert-butyl, 4-[3',5'-di-iso-propylphenyl]indenyl)₂hafnium dichloride;
9-silafluorendiyl(2-ethyl, 4-[3',5'-di-iso-propylphenyl]indenyl)₂zirconium dichloride;
9-silafluorendiyl(2-n-propyl, 4-[3',5'-di-iso-propylphenyl]indenyl)₂zirconium dichloride;
9-silafluorendiyl(2-iso-propyl, 4-[3',5'-di-iso-propylphenyl]indenyl)₂zirconium dichloride;
9-silafluorendiyl(2-n-butyl, 4-[3',5'-di-iso-propylphenyl]indenyl)₂zirconium dichloride;
9-silafluorendiyl(2-iso-butyl, 4-[3',5'-di-iso-propylphenyl]indenyl)₂zirconium dichloride;
9-silafluorendiyl(2-sec-butyl, 4-[3',5'-di-iso-propylphenyl]indenyl)₂zirconium dichloride;
9-silafluorendiyl(2-tert-butyl, 4-[3',5'-di-iso-propylphenyl]indenyl)₂zirconium dichloride;
9-silafluorendiyl(2-ethyl, 4-[3',5'-di-iso-propylphenyl]indenyl)₂hafnium dichloride;
9-silafluorendiyl(2-n-propyl, 4-[3',5'-di-iso-propylphenyl]indenyl)₂hafnium dichloride;
9-silafluorendiyl(2-iso-propyl, 4-[3',5'-di-iso-propylphenyl]indenyl)₂hafnium dichloride;
9-silafluorendiyl(2-n-butyl, 4-[3',5'-di-iso-propylphenyl]indenyl)₂hafnium dichloride;
9-silafluorendiyl(2-iso-butyl, 4-[3',5'-di-iso-propylphenyl]indenyl)₂hafnium dichloride;
9-silafluorendiyl(2-sec-butyl, 4-[3',5'-di-iso-propylphenyl]indenyl)₂hafnium dichloride;
9-silafluorendiyl(2-tert-butyl, 4-[3',5'-di-iso-propylphenyl]indenyl)₂hafnium dichloride;
dimethylsiladiyl(2-ethyl, 4-[3',5'-di-iso-propylphenyl]indenyl)₂zirconium dimethyl;

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dimethylsiladiyl(2-n-propyl, 4-[3',5'-di-iso-propylphenyl]indenyl)₂zirconium dimethyl

dimethylsiladiyl(2-iso-propyl, 4-[3',5'-di-iso-propylphenyl]indenyl)₂zirconium dimethyl;

dimethylsiladiyl(2-n-butyl, 4-[3',5'-di-iso-propylphenyl]indenyl)₂zirconium dimethyl;

dimethylsiladiyl(2-isobutyl, 4-[3',5'-di-iso-propylphenyl]indenyl)₂zirconium dimethyl;

dimethylsiladiyl(2-sec-butyl, 4-[3',5'-di-iso-propylphenyl]indenyl)₂zirconium dimethyl;

dimethylsiladiyl(2-tert-butyl, 4-[3',5'-di-iso-propylphenyl]indenyl)₂zirconium dimethyl;

dimethylsiladiyl(2-ethyl, 4-[3',5'-di-iso-propylphenyl]indenyl)₂hafnium dimethyl;

dimethylsiladiyl(2-n-propyl, 4-[3',5'-di-iso-propylphenyl]indenyl)₂hafnium dimethyl;

dimethylsiladiyl(2-iso-propyl, 4-[3',5'-di-iso-propylphenyl]indenyl)₂hafnium dimethyl;

dimethylsiladiyl(2-n-butyl, 4-[3',5'-di-iso-propylphenyl]indenyl)₂hafnium dimethyl;

dimethylsiladiyl(2-iso-butyl, 4-[3',5'-di-iso-propylphenyl]indenyl)₂zirconium dimethyl;

dimethylsiladiyl(2-sec-butyl, 4-[3',5'-di-iso-propylphenyl]indenyl)₂zirconium dimethyl;

dimethylsiladiyl(2-tert-butyl, 4-[3',5'-di-iso-propylphenyl]indenyl)₂zirconium dimethyl;

9-silafluorendiyl(2-ethyl, 4-[3',5'-di-iso-propylphenyl]indenyl)₂zirconium dimethyl;

9-silafluorendiyl(2-n-propyl, 4-[3',5'-di-iso-propylphenyl]indenyl)₂zirconium dimethyl;

9-silafluorendiyl(2-iso-propyl, 4-[3',5'-di-iso-propylphenyl]indenyl)₂zirconium dimethyl;

9-silafluorendiyl(2-n-butyl, 4-[3',5'-di-iso-propylphenyl]indenyl)₂zirconium dimethyl;

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9-silafluorendiyl(2-iso-butyl, 4-[3',5'-di-iso-propylphenyl]indenyl)₂zirconium dimethyl;
9-silafluorendiyl(2-sec-butyl, 4-[3',5'-di-iso-propylphenyl]indenyl)₂zirconium dimethyl;
9-silafluorendiyl(2-tert-butyl, 4-[3',5'-di-iso-propylphenyl]indenyl)₂zirconium dimethyl;
9-silafluorendiyl(2-ethyl, 4-[3',5'-di-iso-propylphenyl]indenyl)₂hafnium dimethyl;
9-silafluorendiyl(2-n-propyl, 4-[3',5'-di-iso-propylphenyl]indenyl)₂hafnium dimethyl;
9-silafluorendiyl(2-iso-propyl, 4-[3',5'-di-iso-propylphenyl]indenyl)₂hafnium dimethyl;
9-silafluorendiyl(2-n-butyl, 4-[3',5'-di-iso-propylphenyl]indenyl)₂hafnium dimethyl;
9-silafluorendiyl(2-iso-butyl, 4-[3',5'-di-iso-propylphenyl]indenyl)₂hafnium dimethyl;
9-silafluorendiyl(2-sec-butyl, 4-[3',5'-di-iso-propylphenyl]indenyl)₂hafnium dimethyl;
9-silafluorendiyl(2-tert-butyl, 4-[3',5'-di-iso-propylphenyl]indenyl)₂hafnium dimethyl;
dimethylsiladiyl(2-methyl, 4-[3',5'-di-phenylphenyl]indenyl)₂zirconium dichloride;
dimethylsiladiyl(2-ethyl, 4-[3',5'-di-phenylphenyl]indenyl)₂zirconium dichloride;
dimethylsiladiyl(2-n-propyl, 4-[3',5'-di-phenylphenyl]indenyl)₂zirconium dichloride;
dimethylsiladiyl(2-iso-propyl, 4-[3',5'-di-phenylphenyl]indenyl)₂zirconium dichloride;
dimethylsiladiyl(2-n-butyl, 4-[3',5'-di-phenylphenyl]indenyl)₂zirconium dichloride;
dimethylsiladiyl(2-iso-butyl, 4-[3',5'-di-phenylphenyl]indenyl)₂zirconium dichloride;
dimethylsiladiyl(2-sec-butyl, 4-[3',5'-di-phenylphenyl]indenyl)₂zirconium dichloride;
dimethylsiladiyl(2-tert-butyl, 4-[3',5'-di-phenylphenyl]indenyl)₂zirconium dichloride;
dimethylsiladiyl(2-methyl, 4-[3',5'-di-phenylphenyl]indenyl)₂hafnium dichloride;
dimethylsiladiyl(2-ethyl, 4-[3',5'-di-phenylphenyl]indenyl)₂hafnium dichloride;
dimethylsiladiyl(2-n-propyl, 4-[3',5'-di-phenylphenyl]indenyl)₂hafnium dichloride;
dimethylsiladiyl(2-iso-propyl, 4-[3',5'-di-phenylphenyl]indenyl)₂hafnium dichloride;

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dimethylsiladiyl(2-n-butyl, 4-[3',5'-di-phenylphenyl]indenyl)₂hafnium dichloride;
dimethylsiladiyl(2-iso-butyl, 4-[3',5'-di-phenylphenyl]indenyl)₂hafnium dichloride;
dimethylsiladiyl(2-sec-butyl, 4-[3',5'-di-phenylphenyl]indenyl)₂hafnium dichloride;
dimethylsiladiyl(2-tert-butyl, 4-[3',5'-di-phenylphenyl]indenyl)₂hafnium dichloride;
9-silafluorendiyl(2-methyl, 4-[3',5'-di-phenylphenyl]indenyl)₂zirconium dichloride;
9-silafluorendiyl(2-ethyl, 4-[3',5'-di-phenylphenyl]indenyl)₂zirconium dichloride;
9-silafluorendiyl(2-n-propyl, 4-[3',5'-di-phenylphenyl]indenyl)₂zirconium dichloride;
9-silafluorendiyl(2-iso-propyl, 4-[3',5'-di-phenylphenyl]indenyl)₂zirconium
dichloride;
9-silafluorendiyl(2-n-butyl, 4-[3',5'-di-phenylphenyl]indenyl)₂zirconium dichloride;
9-silafluorendiyl(2-iso-butyl, 4-[3',5'-di-phenylphenyl]indenyl)₂zirconium dichloride;
9-silafluorendiyl(2-sec-butyl, 4-[3',5'-di-phenylphenyl]indenyl)₂zirconium dichloride;
9-silafluorendiyl(2-tert-butyl, 4-[3',5'-di-phenylphenyl]indenyl)₂zirconium dichloride;
9-silafluorendiyl(2-methyl, 4-[3',5'-di-phenylphenyl]indenyl)₂hafnium dichloride;
9-silafluorendiyl(2-ethyl, 4-[3',5'-di-phenylphenyl]indenyl)₂hafnium dichloride;
9-silafluorendiyl(2-n-propyl, 4-[3',5'-di-phenylphenyl]indenyl)₂hafnium dichloride;
9-silafluorendiyl(2-iso-propyl, 4-[3',5'-di-phenylphenyl]indenyl)₂hafnium dichloride;
9-silafluorendiyl(2-n-butyl, 4-[3',5'-di-phenylphenyl]indenyl)₂hafnium dichloride;
9-silafluorendiyl(2-iso-butyl, 4-[3',5'-di-phenylphenyl]indenyl)₂hafnium dichloride;
9-silafluorendiyl(2-sec-butyl, 4-[3',5'-di-phenylphenyl]indenyl)₂hafnium dichloride;
9-silafluorendiyl(2-tert-butyl, 4-[3',5'-di-phenylphenyl]indenyl)₂hafnium dichloride;
dimethylsiladiyl(2-methyl, 4-[3',5'-di-phenylphenyl]indenyl)₂zirconium dimethyl;
dimethylsiladiyl(2-ethyl, 4-[3',5'-di-phenylphenyl]indenyl)₂zirconium dimethyl;
dimethylsiladiyl(2-n-propyl, 4-[3',5'-di-phenylphenyl]indenyl)₂zirconium dimethyl;
dimethylsiladiyl(2-iso-propyl, 4-[3',5'-di-phenylphenyl]indenyl)₂zirconium dimethyl;
dimethylsiladiyl(2-n-butyl, 4-[3',5'-di-phenylphenyl]indenyl)₂zirconium dimethyl;
dimethylsiladiyl(2-iso-butyl, 4-[3',5'-di-phenylphenyl]indenyl)₂zirconium dimethyl;
dimethylsiladiyl(2-sec-butyl, 4-[3',5'-di-phenylphenyl]indenyl)₂zirconium dimethyl;

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dimethylsiladiyl(2-tert-butyl, 4-[3',5'-di-phenylphenyl]indenyl)₂zirconium dimethyl;
dimethylsiladiyl(2-methyl, 4-[3',5'-di-phenylphenyl]indenyl)₂hafnium dimethyl;
dimethylsiladiyl(2-ethyl, 4-[3',5'-di-phenylphenyl]indenyl)₂hafnium dimethyl;
dimethylsiladiyl(2-n-propyl, 4-[3',5'-di-phenylphenyl]indenyl)₂hafnium dimethyl;
dimethylsiladiyl(2-iso-propyl, 4-[3',5'-di-phenylphenyl]indenyl)₂hafnium dimethyl;
dimethylsiladiyl(2-n-butyl, 4-[3',5'-di-phenylphenyl]indenyl)₂hafnium dimethyl;
dimethylsiladiyl(2-iso-butyl, 4-[3',5'-di-phenylphenyl]indenyl)₂hafnium dimethyl;
dimethylsiladiyl(2-sec-butyl, 4-[3',5'-di-phenylphenyl]indenyl)₂hafnium dimethyl;
dimethylsiladiyl(2-tert-butyl, 4-[3',5'-di-phenylphenyl]indenyl)₂hafnium dimethyl;
9-silafluorendiyl(2-methyl, 4-[3',5'-di-phenylphenyl]indenyl)₂zirconium dimethyl;
9-silafluorendiyl(2-ethyl, 4-[3',5'-di-phenylphenyl]indenyl)₂zirconium dimethyl;
9-silafluorendiyl(2-n-propyl, 4-[3',5'-di-phenylphenyl]indenyl)₂zirconium dimethyl;
9-silafluorendiyl(2-iso-propyl, 4-[3',5'-di-phenylphenyl]indenyl)₂zirconium dimethyl;
9-silafluorendiyl(2-n-butyl, 4-[3',5'-di-phenylphenyl]indenyl)₂zirconium dimethyl;
9-silafluorendiyl(2-iso-butyl, 4-[3',5'-di-phenylphenyl]indenyl)₂zirconium dimethyl;
9-silafluorendiyl(2-sec-butyl, 4-[3',5'-di-phenylphenyl]indenyl)₂zirconium dimethyl;
9-silafluorendiyl(2-tert-butyl, 4-[3',5'-di-phenylphenyl]indenyl)₂zirconium dimethyl;
9-silafluorendiyl(2-methyl, 4-[3',5'-di-phenylphenyl]indenyl)₂hafnium dimethyl;
9-silafluorendiyl(2-ethyl, 4-[3',5'-di-phenylphenyl]indenyl)₂hafnium dichloride;
9-silafluorendiyl(2-n-propyl, 4-[3',5'-di-phenylphenyl]indenyl)₂hafnium dimethyl;
9-silafluorendiyl(2-iso-propyl, 4-[3',5'-di-phenylphenyl]indenyl)₂hafnium dimethyl;
9-silafluorendiyl(2-n-butyl, 4-[3',5'-di-phenylphenyl]indenyl)₂hafnium dimethyl;
9-silafluorendiyl(2-iso-butyl, 4-[3',5'-di-phenylphenyl]indenyl)₂hafnium dimethyl;
9-silafluorendiyl(2-sec-butyl, 4-[3',5'-di-phenylphenyl]indenyl)₂hafnium dimethyl;
9-silafluorendiyl(2-tert-butyl, 4-[3',5'-di-phenylphenyl]indenyl)₂hafnium dimethyl;
dimethylsiladiyl(2-methyl, 4-[3',5'-di-*t*-butylphenyl]indenyl)₂ η^4 -1,4-diphenyl-1,3-butadiene;

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dimethylsiladiyl(2-ethyl, 4-[3',5'-di-*t*-butylphenyl]indenyl)₂ η⁴-1,4-diphenyl-1,3-butadiene;
dimethylsiladiyl(2-*n*-propyl, 4-[3',5'-di-*t*-butylphenyl]indenyl)₂ η⁴-1,4-diphenyl-1,3-butadiene;
dimethylsiladiyl(2-iso-propyl, 4-[3',5'-di-*t*-butylphenyl]indenyl)₂ η⁴-1,4-diphenyl-1,3-butadiene;
dimethylsiladiyl(2-*n*-butyl, 4-[3',5'-di-*t*-butylphenyl]indenyl)₂ η⁴-1,4-diphenyl-1,3-butadiene;
dimethylsiladiyl(2-iso-butyl, 4-[3',5'-di-*t*-butylphenyl]indenyl)₂ η⁴-1,4-diphenyl-1,3-butadiene;
dimethylsiladiyl(2-sec-butyl, 4-[3',5'-di-*t*-butylphenyl]indenyl)₂ η⁴-1,4-diphenyl-1,3-butadiene;
dimethylsiladiyl(2-tert-butyl, 4-[3',5'-di-*t*-butylphenyl]indenyl)₂ η⁴-1,4-diphenyl-1,3-butadiene;
dimethylsiladiyl(2-ethyl, 4-[3',5'-bis-trifluoromethylphenyl]indenyl)₂ η⁴-1,4-diphenyl-1,3-butadiene;
dimethylsiladiyl(2-*n*-propyl, 4-[3',5'-bis-trifluoromethylphenyl]indenyl)₂ η⁴-1,4-diphenyl-1,3-butadiene;
dimethylsiladiyl(2-iso-propyl, 4-[3',5'-bis-trifluoromethylphenyl]indenyl)₂ η⁴-1,4-diphenyl-1,3-butadiene;
dimethylsiladiyl(2-*n*-butyl, 4-[3',5'-bis-trifluoromethylphenyl]indenyl)₂ η⁴-1,4-diphenyl-1,3-butadiene;
dimethylsiladiyl(2-iso-butyl, 4-[3',5'-bis-trifluoromethylphenyl]indenyl)₂ η⁴-1,4-diphenyl-1,3-butadiene;
dimethylsiladiyl(2-sec-butyl, 4-[3',5'-bis-trifluoromethylphenyl]indenyl)₂ η⁴-1,4-diphenyl-1,3-butadiene;

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dimethylsilyladiyl(2-tert-butyl, 4-[3',5'-bis-trifluoromethylphenyl]indenyl)₂ η⁴-1,4-diphenyl-1,3-butadiene;
dimethylsilyladiyl(2-ethyl, 4-[3',5'-di-iso-propylphenyl]indenyl)₂ η⁴-1,4-diphenyl-1,3-butadiene;
dimethylsilyladiyl(2-n-propyl, 4-[3',5'-di-iso-propylphenyl]indenyl)₂ η⁴-1,4-diphenyl-1,3-butadiene;
dimethylsilyladiyl(2-iso-propyl, 4-[3',5'-di-iso-propylphenyl]indenyl) η⁴-1,4-diphenyl-1,3-butadiene;
dimethylsilyladiyl(2-n-butyl, 4-[3',5'-di-iso-propylphenyl]indenyl)₂ η⁴-1,4-diphenyl-1,3-butadiene;
dimethylsilyladiyl(2-iso-butyl, 4-[3',5'-di-iso-propylphenyl]indenyl)₂ η⁴-1,4-diphenyl-1,3-butadiene;
dimethylsilyladiyl(2-sec-butyl, 4-[3',5'-di-iso-propylphenyl]indenyl)₂ η⁴-1,4-diphenyl-1,3-butadiene;
dimethylsilyladiyl(2-tert-butyl, 4-[3',5'-di-iso-propylphenyl]indenyl)₂ η⁴-1,4-diphenyl-1,3-butadiene;
dimethylsilyladiyl(2-methyl, 4-[3',5'-di-phenylphenyl]indenyl)₂ η⁴-1,4-diphenyl-1,3-butadiene;
dimethylsilyladiyl(2-ethyl, 4-[3',5'-di-phenylphenyl]indenyl)₂ η⁴-1,4-diphenyl-1,3-butadiene;
dimethylsilyladiyl(2-n-propyl, 4-[3',5'-di-phenylphenyl]indenyl)₂ η⁴-1,4-diphenyl-1,3-butadiene;
dimethylsilyladiyl(2-iso-propyl, 4-[3',5'-di-phenylphenyl]indenyl)₂ η⁴-1,4-diphenyl-1,3-butadiene;
dimethylsilyladiyl(2-n-butyl, 4-[3',5'-di-phenylphenyl]indenyl)₂ η⁴-1,4-diphenyl-1,3-butadiene;

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dimethylsiladiyl(2-iso-butyl, 4-[3',5'-di-phenylphenyl]indenyl)₂ η⁴-1,4-diphenyl-1,3-butadiene;

dimethylsiladiyl(2-sec-butyl, 4-[3',5'-di-phenylphenyl]indenyl)₂ η⁴-1,4-diphenyl-1,3-butadiene;

dimethylsiladiyl(2-tert-butyl, 4-[3',5'-di-phenylphenyl]indenyl)₂ η⁴-1,4-diphenyl-1,3-butadiene;

9-silafluorendiyl(2-methyl, 4-[3',5'-di-tbutylphenyl]indenyl)₂ η⁴-1,4-diphenyl-1,3-butadiene;

9-silafluorendiyl(2-ethyl, 4-[3',5'-di-tbutylphenyl]indenyl)₂ η⁴-1,4-diphenyl-1,3-butadiene;

9-silafluorendiyl(2-n-propyl, 4-[3',5'-di-tbutylphenyl]indenyl)₂ η⁴-1,4-diphenyl-1,3-butadiene;

9-silafluorendiyl(2-iso-propyl, 4-[3',5'-di-tbutylphenyl]indenyl)₂ η⁴-1,4-diphenyl-1,3-butadiene;

9-silafluorendiyl(2-n-butyl, 4-[3',5'-di-tbutylphenyl]indenyl)₂ η⁴-1,4-diphenyl-1,3-butadiene;

9-silafluorendiyl(2-iso-butyl, 4-[3',5'-di-tbutylphenyl]indenyl)₂ η⁴-1,4-diphenyl-1,3-butadiene;

9-silafluorendiyl(2-sec-butyl, 4-[3',5'-di-tbutylphenyl]indenyl)₂ η⁴-1,4-diphenyl-1,3-butadiene;

9-silafluorendiyl(2-tert-butyl, 4-[3',5'-di-tbutylphenyl]indenyl)₂ η⁴-1,4-diphenyl-1,3-butadiene;

9-silafluorendiyl(2-ethyl, 4-[3',5'-bis-trifluoromethylphenyl]indenyl)₂ η⁴-1,4-diphenyl-1,3-butadiene;

9-silafluorendiyl(2-n-propyl, 4-[3',5'-bis-trifluoromethylphenyl]indenyl)₂ η⁴-1,4-diphenyl-1,3-butadiene;

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9-silafluorendiyl(2-iso-propyl, 4-[3',5'-bis-trifluoromethylphenyl]indenyl)₂ η⁴-1,4-diphenyl-1,3-butadiene;
9-silafluorendiyl(2-n-butyl, 4-[3',5'-bis-trifluoromethylphenyl]indenyl)₂ η⁴-1,4-diphenyl-1,3-butadiene;
9-silafluorendiyl(2-iso-butyl, 4-[3',5'-bis-trifluoromethylphenyl]indenyl)₂ η⁴-1,4-diphenyl-1,3-butadiene;
9-silafluorendiyl(2-sec-butyl, 4-[3',5'-bis-trifluoromethylphenyl]indenyl)₂ η⁴-1,4-diphenyl-1,3-butadiene;
9-silafluorendiyl(2-tert-butyl, 4-[3',5'-bis-trifluoromethylphenyl]indenyl)₂ η⁴-1,4-diphenyl-1,3-butadiene;
9-silafluorendiyl(2-ethyl, 4-[3',5'-di-iso-propylphenyl]indenyl)₂ η⁴-1,4-diphenyl-1,3-butadiene;
9-silafluorendiyl(2-n-propyl, 4-[3',5'-di-iso-propylphenyl]indenyl)₂ η⁴-1,4-diphenyl-1,3-butadiene;
9-silafluorendiyl(2-iso-propyl, 4-[3',5'-di-iso-propylphenyl]indenyl)₂ η⁴-1,4-diphenyl-1,3-butadiene;
9-silafluorendiyl(2-n-butyl, 4-[3',5'-di-iso-propylphenyl]indenyl)₂ η⁴-1,4-diphenyl-1,3-butadiene;
9-silafluorendiyl(2-iso-butyl, 4-[3',5'-di-iso-propylphenyl]indenyl)₂ η⁴-1,4-diphenyl-1,3-butadiene;
9-silafluorendiyl(2-sec-butyl, 4-[3',5'-di-iso-propylphenyl]indenyl)₂ η⁴-1,4-diphenyl-1,3-butadiene;
9-silafluorendiyl(2-tert-butyl, 4-[3',5'-di-iso-propylphenyl]indenyl)₂ η⁴-1,4-diphenyl-1,3-butadiene;
9-silafluorendiyl(2-methyl, 4-[3',5'-di-phenylphenyl]indenyl)₂ η⁴-1,4-diphenyl-1,3-butadiene;

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9-silafluorendiyl(2-ethyl, 4-[3',5'-di-phenylphenyl]indenyl)₂ η⁴-1,4-diphenyl-1,3-butadiene;
9-silafluorendiyl(2-n-propyl, 4-[3',5'-di-phenylphenyl]indenyl)₂ η⁴-1,4-diphenyl-1,3-butadiene;
9-silafluorendiyl(2-iso-propyl, 4-[3',5'-di-phenylphenyl]indenyl)₂ η⁴-1,4-diphenyl-1,3-butadiene;
9-silafluorendiyl(2-n-butyl, 4-[3',5'-di-phenylphenyl]indenyl)₂ η⁴-1,4-diphenyl-1,3-butadiene;
9-silafluorendiyl(2-iso-butyl, 4-[3',5'-di-phenylphenyl]indenyl)₂ η⁴-1,4-diphenyl-1,3-butadiene;
9-silafluorendiyl(2-sec-butyl, 4-[3',5'-di-phenylphenyl]indenyl)₂ η⁴-1,4-diphenyl-1,3-butadiene;
9-silafluorendiyl(2-tert-butyl, 4-[3',5'-di-phenylphenyl]indenyl)₂ η⁴-1,4-diphenyl-1,3-butadiene;
dimethylamidoborane(2-methyl, 4-[3',5'-di-tbutylphenyl]indenyl)₂zirconium dichloride;
dimethylamidoborane(2-ethyl, 4-[3',5'-di-tbutylphenyl]indenyl)₂zirconium dichloride;
dimethylamidoborane(2-n-propyl, 4-[3',5'-di-tbutylphenyl]indenyl)₂zirconium dichloride;
dimethylamidoborane(2-iso-propyl, 4-[3',5'-di-tbutylphenyl]indenyl)₂zirconium dichloride;
dimethylamidoborane(2-n-butyl, 4-[3',5'-di-tbutylphenyl]indenyl)₂zirconium dichloride;
dimethylamidoborane(2-iso-butyl, 4-[3',5'-di-tbutylphenyl]indenyl)₂zirconium dichloride;
dimethylamidoborane(2-sec-butyl, 4-[3',5'-di-tbutylphenyl]indenyl)₂zirconium dichloride;

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dimethylamidoborane(2-tert-butyl, 4-[3',5'-di-*t*butylphenyl]indenyl)₂zirconium
dichloride;
dimethylamidoborane(2-ethyl, 4-[3',5'-bis-trifluoromethylphenyl]indenyl)₂zirconium
dichloride;
dimethylamidoborane(2-*n*-propyl, 4-[3',5'-bis-
trifluoromethylphenyl]indenyl)₂zirconium dichloride;
dimethylamidoborane(2-iso-propyl, 4-[3',5'-bis-
trifluoromethylphenyl]indenyl)₂zirconium dichloride;
dimethylamidoborane(2-*n*-butyl, 4-[3',5'-bis-
trifluoromethylphenyl]indenyl)₂zirconium dichloride;
dimethylamidoborane(2-iso-butyl, 4-[3',5'-bis-
trifluoromethylphenyl]indenyl)₂zirconium dichloride;
dimethylamidoborane(2-sec-butyl, 4-[3',5'-bis-
trifluoromethylphenyl]indenyl)₂zirconium dichloride;
dimethylamidoborane(2-tert-butyl, 4-[3',5'-bis-
trifluoromethylphenyl]indenyl)₂zirconium dichloride;
dimethylamidoborane(2-ethyl, 4-[3',5'-di-iso-propylphenyl]indenyl)₂zirconium
dichloride;
dimethylamidoborane(2-*n*-propyl, 4-[3',5'-di-iso-propylphenyl]indenyl)₂zirconium
dichloride
dimethylamidoborane(2-iso-propyl, 4-[3',5'-di-iso-propylphenyl]indenyl)₂zirconium
dichloride;
dimethylamidoborane(2-*n*-butyl, 4-[3',5'-di-iso-propylphenyl]indenyl)₂zirconium
dichloride;
dimethylamidoborane(2-iso-butyl, 4-[3',5'-di-iso-propylphenyl]indenyl)₂zirconium
dichloride;
dimethylamidoborane(2-sec-butyl, 4-[3',5'-di-iso-propylphenyl]indenyl)₂zirconium
dichloride;

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dimethylamidoborane(2-tert-butyl, 4-[3',5'-di-iso-propylphenyl]indenyl)₂zirconium
dichloride;

dimethylamidoborane(2-methyl, 4-[3',5'-di-phenylphenyl]indenyl)₂zirconium
dichloride;

dimethylamidoborane(2-ethyl, 4-[3',5'-di-phenylphenyl]indenyl)₂zirconium
dichloride;

dimethylamidoborane(2-n-propyl, 4-[3',5'-di-phenylphenyl]indenyl)₂zirconium
dichloride;

dimethylamidoborane(2-iso-propyl, 4-[3',5'-di-phenylphenyl]indenyl)₂zirconium
dichloride;

dimethylamidoborane(2-n-butyl, 4-[3',5'-di-phenylphenyl]indenyl)₂zirconium
dichloride;

dimethylamidoborane(2-iso-butyl, 4-[3',5'-di-phenylphenyl]indenyl)₂zirconium
dichloride;

dimethylamidoborane(2-sec-butyl, 4-[3',5'-di-phenylphenyl]indenyl)₂zirconium
dichloride;

dimethylamidoborane(2-tert-butyl, 4-[3',5'-di-phenylphenyl]indenyl)₂zirconium
dichloride;

dimethylamidoborane(2-methyl, 4-[3',5'-di-tbutylphenyl]indenyl)₂ η^4 -1,4-diphenyl-
1,3-butadiene;

dimethylamidoborane(2-ethyl, 4-[3',5'-di-tbutylphenyl]indenyl)₂ η^4 -1,4-diphenyl-1,3-
butadiene;

dimethylamidoborane(2-n-propyl, 4-[3',5'-di-tbutylphenyl]indenyl)₂ η^4 -1,4-diphenyl-
1,3-butadiene;

dimethylamidoborane(2-iso-propyl, 4-[3',5'-di-tbutylphenyl]indenyl)₂ η^4 -1,4-
diphenyl-1,3-butadiene;

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dimethylamidoborane(2-n-butyl, 4-[3',5'-di-*t*-butylphenyl]indenyl)₂ η⁴-1,4-diphenyl-1,3-butadiene;

dimethylamidoborane(2-iso-butyl, 4-[3',5'-di-*t*-butylphenyl]indenyl)₂ η⁴-1,4-diphenyl-1,3-butadiene;

dimethylamidoborane(2-sec-butyl, 4-[3',5'-di-*t*-butylphenyl]indenyl)₂ η⁴-1,4-diphenyl-1,3-butadiene;

dimethylamidoborane(2-tert-butyl, 4-[3',5'-di-*t*-butylphenyl]indenyl)₂ η⁴-1,4-diphenyl-1,3-butadiene;

dimethylamidoborane(2-ethyl, 4-[3',5'-bis-trifluoromethylphenyl]indenyl)₂ η⁴-1,4-diphenyl-1,3-butadiene;

dimethylamidoborane(2-n-propyl, 4-[3',5'-bis-trifluoromethylphenyl]indenyl)₂ η⁴-1,4-diphenyl-1,3-butadiene;

dimethylamidoborane(2-iso-propyl, 4-[3',5'-bis-trifluoromethylphenyl]indenyl)₂ η⁴-1,4-diphenyl-1,3-butadiene;

dimethylamidoborane(2-n-butyl, 4-[3',5'-bis-trifluoromethylphenyl]indenyl)₂ η⁴-1,4-diphenyl-1,3-butadiene;

dimethylamidoborane(2-iso-butyl, 4-[3',5'-bis-trifluoromethylphenyl]indenyl)₂ η⁴-1,4-diphenyl-1,3-butadiene;

dimethylamidoborane(2-sec-butyl, 4-[3',5'-bis-trifluoromethylphenyl]indenyl)₂ η⁴-1,4-diphenyl-1,3-butadiene;

dimethylamidoborane(2-tert-butyl, 4-[3',5'-bis-trifluoromethylphenyl]indenyl)₂ η⁴-1,4-diphenyl-1,3-butadiene;

dimethylamidoborane(2-ethyl, 4-[3',5'-di-iso-propylphenyl]indenyl)₂ η⁴-1,4-diphenyl-1,3-butadiene;

dimethylamidoborane(2-n-propyl, 4-[3',5'-di-iso-propylphenyl]indenyl)₂ η⁴-1,4-diphenyl-1,3-butadiene;

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dimethylamidoborane(2-iso-propyl, 4-[3',5'-di-iso-propylphenyl]indenyl) η^4 -1,4-diphenyl-1,3-butadiene;
dimethylamidoborane(2-n-butyl, 4-[3',5'-di-iso-propylphenyl]indenyl)₂ η^4 -1,4-diphenyl-1,3-butadiene;
dimethylamidoborane(2-iso-butyl, 4-[3',5'-di-iso-propylphenyl]indenyl)₂ η^4 -1,4-diphenyl-1,3-butadiene;
dimethylamidoborane(2-sec-butyl, 4-[3',5'-di-iso-propylphenyl]indenyl)₂ η^4 -1,4-diphenyl-1,3-butadiene;
dimethylamidoborane(2-tert-butyl, 4-[3',5'-di-iso-propylphenyl]indenyl)₂ η^4 -1,4-diphenyl-1,3-butadiene;
dimethylamidoborane(2-methyl, 4-[3',5'-di-phenylphenyl]indenyl)₂ η^4 -1,4-diphenyl-1,3-butadiene;
dimethylamidoborane(2-ethyl, 4-[3',5'-di-phenylphenyl]indenyl)₂ η^4 -1,4-diphenyl-1,3-butadiene;
dimethylamidoborane(2-n-propyl, 4-[3',5'-di-phenylphenyl]indenyl)₂ η^4 -1,4-diphenyl-1,3-butadiene;
dimethylamidoborane(2-iso-propyl, 4-[3',5'-di-phenylphenyl]indenyl)₂ η^4 -1,4-diphenyl-1,3-butadiene;
dimethylamidoborane(2-n-butyl, 4-[3',5'-di-phenylphenyl]indenyl)₂ η^4 -1,4-diphenyl-1,3-butadiene;
dimethylamidoborane(2-iso-butyl, 4-[3',5'-di-phenylphenyl]indenyl)₂ η^4 -1,4-diphenyl-1,3-butadiene;
dimethylamidoborane(2-sec-butyl, 4-[3',5'-di-phenylphenyl]indenyl)₂ η^4 -1,4-diphenyl-1,3-butadiene;
dimethylamidoborane(2-tert-butyl, 4-[3',5'-di-phenylphenyl]indenyl)₂ η^4 -1,4-diphenyl-1,3-butadiene;

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dimethylamidoborane(2-methyl, 4-[3',5'-di-tbutylphenyl]indenyl)₂ zirconium dimethyl;
dimethylamidoborane(2-ethyl, 4-[3',5'-di-tbutylphenyl]indenyl)₂ zirconium dimethyl;
dimethylamidoborane(2-n-propyl, 4-[3',5'-di-tbutylphenyl]indenyl)₂ zirconium dimethyl;
dimethylamidoborane(2-iso-propyl, 4-[3',5'-di-tbutylphenyl]indenyl)₂ zirconium dimethyl;
dimethylamidoborane(2-n-butyl, 4-[3',5'-di-tbutylphenyl]indenyl)₂ zirconium dimethyl;
dimethylamidoborane(2-iso-butyl, 4-[3',5'-di-tbutylphenyl]indenyl)₂ zirconium dimethyl;
dimethylamidoborane(2-sec-butyl, 4-[3',5'-di-tbutylphenyl]indenyl)₂ zirconium dimethyl;
dimethylamidoborane(2-tert-butyl, 4-[3',5'-di-tbutylphenyl]indenyl)₂ zirconium dimethyl;
dimethylamidoborane(2-ethyl, 4-[3',5'-bis-trifluoromethylphenyl]indenyl)₂ zirconium dimethyl;
dimethylamidoborane(2-n-propyl, 4-[3',5'-bis-trifluoromethylphenyl]indenyl)₂ zirconium dimethyl;
dimethylamidoborane(2-iso-propyl, 4-[3',5'-bis-trifluoromethylphenyl]indenyl)₂ zirconium dimethyl;
dimethylamidoborane(2-n-butyl, 4-[3',5'-bis-trifluoromethylphenyl]indenyl)₂ zirconium dimethyl;
dimethylamidoborane(2-iso-butyl, 4-[3',5'-bis-trifluoromethylphenyl]indenyl)₂ zirconium dimethyl;
dimethylamidoborane(2-sec-butyl, 4-[3',5'-bis-trifluoromethylphenyl]indenyl)₂ zirconium dimethyl;

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dimethylamidoborane(2-tert-butyl, 4-[3',5'-bis-trifluoromethylphenyl]indenyl)₂zirconium dimethyl;
dimethylamidoborane(2-ethyl, 4-[3',5'-di-iso-propylphenyl]indenyl)₂zirconium dimethyl;
dimethylamidoborane(2-n-propyl, 4-[3',5'-di-iso-propylphenyl]indenyl)₂zirconium dimethyl;
dimethylamidoborane(2-iso-propyl, 4-[3',5'-di-iso-propylphenyl]indenyl)₂zirconium dimethyl;
dimethylamidoborane(2-n-butyl, 4-[3',5'-di-iso-propylphenyl]indenyl)₂zirconium dimethyl;
dimethylamidoborane(2-iso-butyl, 4-[3',5'-di-iso-propylphenyl]indenyl)₂zirconium dimethyl;
dimethylamidoborane(2-sec-butyl, 4-[3',5'-di-iso-propylphenyl]indenyl)₂zirconium dimethyl;
dimethylamidoborane(2-tert-butyl, 4-[3',5'-di-iso-propylphenyl]indenyl)₂zirconium dimethyl;
dimethylamidoborane(2-methyl, 4-[3',5'-di-phenylphenyl]indenyl)₂zirconium dimethyl;
dimethylamidoborane(2-ethyl, 4-[3',5'-di-phenylphenyl]indenyl)₂zirconium dimethyl;
dimethylamidoborane(2-n-propyl, 4-[3',5'-di-phenylphenyl]indenyl)₂zirconium dimethyl;
dimethylamidoborane(2-iso-propyl, 4-[3',5'-di-phenylphenyl]indenyl)₂zirconium dimethyl;
dimethylamidoborane(2-n-butyl, 4-[3',5'-di-phenylphenyl]indenyl)₂zirconium dimethyl;
dimethylamidoborane(2-iso-butyl, 4-[3',5'-di-phenylphenyl]indenyl)₂zirconium dimethyl;

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dimethylamidoborane(2-sec-butyl, 4-[3',5'-di-phenylphenyl]indenyl)₂zirconium dimethyl;
dimethylamidoborane(2-tert-butyl, 4-[3',5'-di-phenylphenyl]indenyl)₂zirconium dimethyl;
diisopropylamidoborane(2-methyl, 4-[3',5'-di-tbutylphenyl]indenyl)₂zirconium dichloride;
diisopropylamidoborane(2-ethyl, 4-[3',5'-di-tbutylphenyl]indenyl)₂zirconium dichloride;
diisopropylamidoborane(2-n-propyl, 4-[3',5'-di-tbutylphenyl]indenyl)₂zirconium dichloride;
diisopropylamidoborane(2-iso-propyl, 4-[3',5'-di-tbutylphenyl]indenyl)₂zirconium dichloride;
diisopropylamidoborane(2-n-butyl, 4-[3',5'-di-tbutylphenyl]indenyl)₂zirconium dichloride;
diisopropylamidoborane(2-iso-butyl, 4-[3',5'-di-tbutylphenyl]indenyl)₂zirconium dichloride;
diisopropylamidoborane(2-sec-butyl, 4-[3',5'-di-tbutylphenyl]indenyl)₂zirconium dichloride;
diisopropylamidoborane(2-tert-butyl, 4-[3',5'-di-tbutylphenyl]indenyl)₂zirconium dichloride;
diisopropylamidoborane(2-ethyl, 4-[3',5'-bis-trifluoromethylphenyl]indenyl)₂zirconium dichloride;
diisopropylamidoborane(2-n-propyl, 4-[3',5'-bis-trifluoromethylphenyl]indenyl)₂zirconium dichloride;
diisopropylamidoborane(2-iso-propyl, 4-[3',5'-bis-trifluoromethylphenyl]indenyl)₂zirconium dichloride;
diisopropylamidoborane(2-n-butyl, 4-[3',5'-bis-trifluoromethylphenyl]indenyl)₂zirconium dichloride;

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diisopropylamidoborane(2-iso-butyl, 4-[3',5'-bis-trifluoromethylphenyl]indenyl)₂zirconium dichloride;
diisopropylamidoborane(2-sec-butyl, 4-[3',5'-bis-trifluoromethylphenyl]indenyl)₂zirconium dichloride;
diisopropylamidoborane(2-tert-butyl, 4-[3',5'-bis-trifluoromethylphenyl]indenyl)₂zirconium dichloride;
diisopropylamidoborane(2-ethyl, 4-[3',5'-di-iso-propylphenyl]indenyl)₂zirconium dichloride;
diisopropylamidoborane(2-n-propyl, 4-[3',5'-di-iso-propylphenyl]indenyl)₂zirconium dichloride;
diisopropylamidoborane(2-iso-propyl, 4-[3',5'-di-iso-propylphenyl]indenyl)₂zirconium dichloride;
diisopropylamidoborane(2-n-butyl, 4-[3',5'-di-iso-propylphenyl]indenyl)₂zirconium dichloride;
diisopropylamidoborane(2-iso-butyl, 4-[3',5'-di-iso-propylphenyl]indenyl)₂zirconium dichloride;
diisopropylamidoborane(2-sec-butyl, 4-[3',5'-di-iso-propylphenyl]indenyl)₂zirconium dichloride;
diisopropylamidoborane(2-tert-butyl, 4-[3',5'-di-iso-propylphenyl]indenyl)₂zirconium dichloride;
diisopropylamidoborane(2-methyl, 4-[3',5'-di-phenylphenyl]indenyl)₂zirconium dichloride;
diisopropylamidoborane(2-ethyl, 4-[3',5'-di-phenylphenyl]indenyl)₂zirconium dichloride;
diisopropylamidoborane(2-n-propyl, 4-[3',5'-di-phenylphenyl]indenyl)₂zirconium dichloride;
diisopropylamidoborane(2-iso-propyl, 4-[3',5'-di-phenylphenyl]indenyl)₂zirconium dichloride;

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diisopropylamidoborane(2-n-butyl, 4-[3',5'-di-phenylphenyl]indenyl)₂zirconium dichloride;

diisopropylamidoborane(2-iso-butyl, 4-[3',5'-di-phenylphenyl]indenyl)₂zirconium dichloride;

diisopropylamidoborane(2-sec-butyl, 4-[3',5'-di-phenylphenyl]indenyl)₂zirconium dichloride;

diisopropylamidoborane(2-tert-butyl, 4-[3',5'-di-phenylphenyl]indenyl)₂zirconium dichloride;

diisopropylamidoborane(2-methyl, 4-[3',5'-di-tbutylphenyl]indenyl)₂η⁴-1,4-diphenyl-1,3-butadiene;

diisopropylamidoborane(2-ethyl, 4-[3',5'-di-tbutylphenyl]indenyl)₂η⁴-1,4-diphenyl-1,3-butadiene;

diisopropylamidoborane(2-n-propyl, 4-[3',5'-di-tbutylphenyl]indenyl)₂η⁴-1,4-diphenyl-1,3-butadiene;

diisopropylamidoborane(2-iso-propyl, 4-[3',5'-di-tbutylphenyl]indenyl)₂η⁴-1,4-diphenyl-1,3-butadiene;

diisopropylamidoborane(2-n-butyl, 4-[3',5'-di-tbutylphenyl]indenyl)₂η⁴-1,4-diphenyl-1,3-butadiene;

diisopropylamidoborane(2-iso-butyl, 4-[3',5'-di-tbutylphenyl]indenyl)₂η⁴-1,4-diphenyl-1,3-butadiene;

diisopropylamidoborane(2-sec-butyl, 4-[3',5'-di-tbutylphenyl]indenyl)₂η⁴-1,4-diphenyl-1,3-butadiene;

diisopropylamidoborane(2-tert-butyl, 4-[3',5'-di-tbutylphenyl]indenyl)₂η⁴-1,4-diphenyl-1,3-butadiene;

diisopropylamidoborane(2-ethyl, 4-[3',5'-bis-trifluoromethylphenyl]indenyl)₂η⁴-1,4-diphenyl-1,3-butadiene;

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diisopropylamidoborane(2-n-propyl, 4-[3',5'-bis-trifluoromethylphenyl]indenyl)₂ η⁴-1,4-diphenyl-1,3-butadiene;

diisopropylamidoborane(2-iso-propyl, 4-[3',5'-bis-trifluoromethylphenyl]indenyl)₂ η⁴-1,4-diphenyl-1,3-butadiene;

diisopropylamidoborane(2-n-butyl, 4-[3',5'-bis-trifluoromethylphenyl]indenyl)₂ η⁴-1,4-diphenyl-1,3-butadiene;

diisopropylamidoborane(2-iso-butyl, 4-[3',5'-bis-trifluoromethylphenyl]indenyl)₂ η⁴-1,4-diphenyl-1,3-butadiene;

diisopropylamidoborane(2-sec-butyl, 4-[3',5'-bis-trifluoromethylphenyl]indenyl)₂ η⁴-1,4-diphenyl-1,3-butadiene;

diisopropylamidoborane(2-tert-butyl, 4-[3',5'-bis-trifluoromethylphenyl]indenyl)₂ η⁴-1,4-diphenyl-1,3-butadiene;

diisopropylamidoborane(2-ethyl, 4-[3',5'-di-iso-propylphenyl]indenyl)₂ η⁴-1,4-diphenyl-1,3-butadiene;

diisopropylamidoborane(2-n-propyl, 4-[3',5'-di-iso-propylphenyl]indenyl)₂ η⁴-1,4-diphenyl-1,3-butadiene;

diisopropylamidoborane(2-iso-propyl, 4-[3',5'-di-iso-propylphenyl]indenyl)₂ η⁴-1,4-diphenyl-1,3-butadiene;

diisopropylamidoborane(2-n-butyl, 4-[3',5'-di-iso-propylphenyl]indenyl)₂ η⁴-1,4-diphenyl-1,3-butadiene;

diisopropylamidoborane(2-iso-butyl, 4-[3',5'-di-iso-propylphenyl]indenyl)₂ η⁴-1,4-diphenyl-1,3-butadiene;

diisopropylamidoborane(2-sec-butyl, 4-[3',5'-di-iso-propylphenyl]indenyl)₂ η⁴-1,4-diphenyl-1,3-butadiene;

diisopropylamidoborane(2-tert-butyl, 4-[3',5'-di-iso-propylphenyl]indenyl)₂ η⁴-1,4-diphenyl-1,3-butadiene;

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diisopropylamidoborane(2-methyl, 4-[3',5'-di-phenylphenyl]indenyl)₂ η⁴-1,4-diphenyl-1,3-butadiene;
diisopropylamidoborane(2-ethyl, 4-[3',5'-di-phenylphenyl]indenyl)₂ η⁴-1,4-diphenyl-1,3-butadiene;
diisopropylamidoborane(2-n-propyl, 4-[3',5'-di-phenylphenyl]indenyl)₂ η⁴-1,4-diphenyl-1,3-butadiene;
diisopropylamidoborane(2-iso-propyl, 4-[3',5'-di-phenylphenyl]indenyl)₂ η⁴-1,4-diphenyl-1,3-butadiene;
diisopropylamidoborane(2-n-butyl, 4-[3',5'-di-phenylphenyl]indenyl)₂ η⁴-1,4-diphenyl-1,3-butadiene;
diisopropylamidoborane(2-iso-butyl, 4-[3',5'-di-phenylphenyl]indenyl)₂ η⁴-1,4-diphenyl-1,3-butadiene;
diisopropylamidoborane(2-sec-butyl, 4-[3',5'-di-phenylphenyl]indenyl)₂ η⁴-1,4-diphenyl-1,3-butadiene;
diisopropylamidoborane(2-tert-butyl, 4-[3',5'-di-phenylphenyl]indenyl)₂ η⁴-1,4-diphenyl-1,3-butadiene;
diisopropylamidoborane(2-methyl, 4-[3',5'-di-tbutylphenyl]indenyl)₂zirconium dimethyl;
diisopropylamidoborane(2-ethyl, 4-[3',5'-di-tbutylphenyl]indenyl)₂zirconium dimethyl;
diisopropylamidoborane(2-n-propyl, 4-[3',5'-di-tbutylphenyl]indenyl)₂zirconium dimethyl;
diisopropylamidoborane(2-iso-propyl, 4-[3',5'-di-tbutylphenyl]indenyl)₂zirconium dimethyl;
diisopropylamidoborane(2-n-butyl, 4-[3',5'-di-tbutylphenyl]indenyl)₂zirconium dimethyl;

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diisopropylamidoborane(1-iso-butyl, 4-[3',5'-di-tbutylphenyl]indenyl)₂zirconium dimethyl;
diisopropylamidoborane(1-sec-butyl, 4-[3',5'-di-tbutylphenyl]indenyl)₂zirconium dimethyl;
diisopropylamidoborane(1-tert-butyl, 4-[3',5'-di-tbutylphenyl]indenyl)₂zirconium dimethyl;
diisopropylamidoborane(2-ethyl, 4-[3',5'-bis-trifluoromethylphenyl]indenyl)₂zirconium dimethyl;
diisopropylamidoborane(2-n-propyl, 4-[3',5'-bis-trifluoromethylphenyl]indenyl)₂zirconium dimethyl;
diisopropylamidoborane(2-iso-propyl, 4-[3',5'-bis-trifluoromethylphenyl]indenyl)₂zirconium dimethyl;
diisopropylamidoborane(2-n-butyl, 4-[3',5'-bis-trifluoromethylphenyl]indenyl)₂zirconium dimethyl;
diisopropylamidoborane(2-iso-butyl, 4-[3',5'-bis-trifluoromethylphenyl]indenyl)₂zirconium dimethyl;
diisopropylamidoborane(2-sec-butyl, 4-[3',5'-bis-trifluoromethylphenyl]indenyl)₂zirconium dimethyl;
diisopropylamidoborane(2-tert-butyl, 4-[3',5'-bis-trifluoromethylphenyl]indenyl)₂zirconium dimethyl;
diisopropylamidoborane(2-ethyl, 4-[3',5'-di-iso-propylphenyl]indenyl)₂zirconium dimethyl;
diisopropylamidoborane(2-n-propyl, 4-[3',5'-di-iso-propylphenyl]indenyl)₂zirconium dimethyl;
diisopropylamidoborane(2-iso-propyl, 4-[3',5'-di-iso-propylphenyl]indenyl)₂zirconium dimethyl;
diisopropylamidoborane(2-n-butyl, 4-[3',5'-di-iso-propylphenyl]indenyl)₂zirconium dimethyl;

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diisopropylamidoborane(2-iso-butyl, 4-[3',5'-di-iso-propylphenyl]indenyl)₂zirconium dimethyl;
diisopropylamidoborane(2-sec-butyl, 4-[3',5'-di-iso-propylphenyl]indenyl)₂zirconium dimethyl;
diisopropylamidoborane(2-tert-butyl, 4-[3',5'-di-iso-propylphenyl]indenyl)₂zirconium dimethyl;
diisopropylamidoborane(2-methyl, 4-[3',5'-di-phenylphenyl]indenyl)₂zirconium dimethyl;
diisopropylamidoborane(2-ethyl, 4-[3',5'-di-phenylphenyl]indenyl)₂zirconium dimethyl;
diisopropylamidoborane(2-n-propyl, 4-[3',5'-di-phenylphenyl]indenyl)₂zirconium dimethyl;
diisopropylamidoborane(2-iso-propyl, 4-[3',5'-di-phenylphenyl]indenyl)₂zirconium dimethyl;
diisopropylamidoborane(2-n-butyl, 4-[3',5'-di-phenylphenyl]indenyl)₂zirconium dimethyl;
diisopropylamidoborane(2-iso-butyl, 4-[3',5'-di-phenylphenyl]indenyl)₂zirconium dimethyl;
diisopropylamidoborane(2-sec-butyl, 4-[3',5'-di-phenylphenyl]indenyl)₂zirconium dimethyl;
diisopropylamidoborane(2-tert-butyl, 4-[3',5'-di-phenylphenyl]indenyl)₂zirconium dimethyl;
bis(trimethylsilyl)amidoborane(2-methyl, 4-[3',5'-di-tbutylphenyl]indenyl)₂zirconium dichloride;
bis(trimethylsilyl)amidoborane(2-ethyl, 4-[3',5'-di-tbutylphenyl]indenyl)₂zirconium dichloride;
bis(trimethylsilyl)amidoborane(2-n-propyl, 4-[3',5'-di-tbutylphenyl]indenyl)₂zirconium dichloride;

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bis(trimethylsilyl)amido borane(2-iso-propyl, 4-[3',5'-di-
tbutylphenyl]indenyl)₂zirconium dichloride;
bis(trimethylsilyl)amido borane(2-n-butyl, 4-[3',5'-di-tbutylphenyl]indenyl)₂zirconium
dichloride;
bis(trimethylsilyl)amido borane(2-iso-butyl, 4-[3',5'-di-
tbutylphenyl]indenyl)₂zirconium dichloride;
bis(trimethylsilyl)amido borane(2-sec-butyl, 4-[3',5'-di-
tbutylphenyl]indenyl)₂zirconium dichloride;
bis(trimethylsilyl)amido borane(2-tert-butyl, 4-[3',5'-di-
tbutylphenyl]indenyl)₂zirconium dichloride;
bis(trimethylsilyl)amido borane(2-ethyl, 4-[3',5'-bis-
trifluoromethylphenyl]indenyl)₂zirconium dichloride;
bis(trimethylsilyl)amido borane(2-n-propyl, 4-[3',5'-bis-
trifluoromethylphenyl]indenyl)₂zirconium dichloride;
bis(trimethylsilyl)amido borane(2-iso-propyl, 4-[3',5'-bis-
trifluoromethylphenyl]indenyl)₂zirconium dichloride;
bis(trimethylsilyl)amido borane(2-n-butyl, 4-[3',5'-bis-
trifluoromethylphenyl]indenyl)₂zirconium dichloride;
bis(trimethylsilyl)amido borane(2-iso-butyl, 4-[3',5'-bis-
trifluoromethylphenyl]indenyl)₂zirconium dichloride;
bis(trimethylsilyl)amido borane(2-sec-butyl, 4-[3',5'-bis-
trifluoromethylphenyl]indenyl)₂zirconium dichloride;
bis(trimethylsilyl)amido borane(2-tert-butyl, 4-[3',5'-bis-
trifluoromethylphenyl]indenyl)₂zirconium dichloride;
bis(trimethylsilyl)amido borane(2-ethyl, 4-[3',5'-di-iso-
propylphenyl]indenyl)₂zirconium dichloride;
bis(trimethylsilyl)amido borane(2-n-propyl, 4-[3',5'-di-iso-
propylphenyl]indenyl)₂zirconium dichloride

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bis(trimethylsilyl)amido borane(2-iso-propyl, 4-[3',5'-di-iso-propylphenyl]indenyl)₂zirconium dichloride;
bis(trimethylsilyl)amido borane(2-n-butyl, 4-[3',5'-di-iso-propylphenyl]indenyl)₂zirconium dichloride;
bis(trimethylsilyl)amido borane(2-iso-butyl, 4-[3',5'-di-iso-propylphenyl]indenyl)₂zirconium dichloride;
bis(trimethylsilyl)amido borane(2-sec-butyl, 4-[3',5'-di-iso-propylphenyl]indenyl)₂zirconium dichloride;
bis(trimethylsilyl)amido borane(2-tert-butyl, 4-[3',5'-di-iso-propylphenyl]indenyl)₂zirconium dichloride;
bis(trimethylsilyl)amido borane(2-methyl, 4-[3',5'-di-phenylphenyl]indenyl)₂zirconium dichloride;
bis(trimethylsilyl)amido borane(2-ethyl, 4-[3',5'-di-phenylphenyl]indenyl)₂zirconium dichloride;
bis(trimethylsilyl)amido borane(2-n-propyl, 4-[3',5'-di-phenylphenyl]indenyl)₂zirconium dichloride;
bis(trimethylsilyl)amido borane(2-iso-propyl, 4-[3',5'-di-phenylphenyl]indenyl)₂zirconium dichloride;
bis(trimethylsilyl)amido borane(2-n-butyl, 4-[3',5'-di-phenylphenyl]indenyl)₂zirconium dichloride;
bis(trimethylsilyl)amido borane(2-iso-butyl, 4-[3',5'-di-phenylphenyl]indenyl)₂zirconium dichloride;
bis(trimethylsilyl)amido borane(2-sec-butyl, 4-[3',5'-di-phenylphenyl]indenyl)₂zirconium dichloride;
bis(trimethylsilyl)amido borane(2-tert-butyl, 4-[3',5'-di-phenylphenyl]indenyl)₂zirconium dichloride;
bis(trimethylsilyl)amido borane(2-methyl, 4-[3',5'-di-*t*-butylphenyl]indenyl)₂ η⁴-1,4-diphenyl-1,3-butadiene;

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bis(trimethylsilyl)amido borane(2-ethyl, 4-[3',5'-di-*t*-butylphenyl]indenyl)₂ η⁴-1,4-diphenyl-1,3-butadiene;
bis(trimethylsilyl)amido borane(2-*n*-propyl, 4-[3',5'-di-*t*-butylphenyl]indenyl)₂ η⁴-1,4-diphenyl-1,3-butadiene;
bis(trimethylsilyl)amido borane(2-iso-propyl, 4-[3',5'-di-*t*-butylphenyl]indenyl)₂ η⁴-1,4-diphenyl-1,3-butadiene;
bis(trimethylsilyl)amido borane(2-*n*-butyl, 4-[3',5'-di-*t*-butylphenyl]indenyl)₂ η⁴-1,4-diphenyl-1,3-butadiene;
bis(trimethylsilyl)amido borane(2-iso-butyl, 4-[3',5'-di-*t*-butylphenyl]indenyl)₂ η⁴-1,4-diphenyl-1,3-butadiene;
bis(trimethylsilyl)amido borane(2-sec-butyl, 4-[3',5'-di-*t*-butylphenyl]indenyl)₂ η⁴-1,4-diphenyl-1,3-butadiene;
bis(trimethylsilyl)amido borane(2-tert-butyl, 4-[3',5'-di-*t*-butylphenyl]indenyl)₂ η⁴-1,4-diphenyl-1,3-butadiene;
bis(trimethylsilyl)amido borane(2-ethyl, 4-[3',5'-bis-trifluoromethylphenyl]indenyl)₂ η⁴-1,4-diphenyl-1,3-butadiene;
bis(trimethylsilyl)amido borane(2-*n*-propyl, 4-[3',5'-bis-trifluoromethylphenyl]indenyl)₂ η⁴-1,4-diphenyl-1,3-butadiene;
bis(trimethylsilyl)amido borane(2-iso-propyl, 4-[3',5'-bis-trifluoromethylphenyl]indenyl)₂ η⁴-1,4-diphenyl-1,3-butadiene;
bis(trimethylsilyl)amido borane(2-*n*-butyl, 4-[3',5'-bis-trifluoromethylphenyl]indenyl)₂ η⁴-1,4-diphenyl-1,3-butadiene;
bis(trimethylsilyl)amido borane(2-iso-butyl, 4-[3',5'-bis-trifluoromethylphenyl]indenyl)₂ η⁴-1,4-diphenyl-1,3-butadiene;
bis(trimethylsilyl)amido borane(2-sec-butyl, 4-[3',5'-bis-trifluoromethylphenyl]indenyl)₂ η⁴-1,4-diphenyl-1,3-butadiene;

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bis(trimethylsilyl)amidoborane(2-tert-butyl, 4-[3',5'-bis-trifluoromethylphenyl]indenyl)₂ η⁴-1,4-diphenyl-1,3-butadiene;
bis(trimethylsilyl)amidoborane(2-ethyl, 4-[3',5'-di-iso-propylphenyl]indenyl)₂ η⁴-1,4-diphenyl-1,3-butadiene;
bis(trimethylsilyl)amidoborane(2-n-propyl, 4-[3',5'-di-iso-propylphenyl]indenyl)₂ η⁴-1,4-diphenyl-1,3-butadiene;
bis(trimethylsilyl)amidoborane(2-iso-propyl, 4-[3',5'-di-iso-propylphenyl]indenyl)₂ η⁴-1,4-diphenyl-1,3-butadiene;
bis(trimethylsilyl)amidoborane(2-n-butyl, 4-[3',5'-di-iso-propylphenyl]indenyl)₂ η⁴-1,4-diphenyl-1,3-butadiene;
bis(trimethylsilyl)amidoborane(2-iso-butyl, 4-[3',5'-di-iso-propylphenyl]indenyl)₂ η⁴-1,4-diphenyl-1,3-butadiene;
bis(trimethylsilyl)amidoborane(2-sec-butyl, 4-[3',5'-di-iso-propylphenyl]indenyl)₂ η⁴-1,4-diphenyl-1,3-butadiene;
bis(trimethylsilyl)amidoborane(2-tert-butyl, 4-[3',5'-di-iso-propylphenyl]indenyl)₂ η⁴-1,4-diphenyl-1,3-butadiene;
bis(trimethylsilyl)amidoborane(2-methyl, 4-[3',5'-di-phenylphenyl]indenyl)₂ η⁴-1,4-diphenyl-1,3-butadiene;
bis(trimethylsilyl)amidoborane(2-ethyl, 4-[3',5'-di-phenylphenyl]indenyl)₂ η⁴-1,4-diphenyl-1,3-butadiene;
bis(trimethylsilyl)amidoborane(2-n-propyl, 4-[3',5'-di-phenylphenyl]indenyl)₂ η⁴-1,4-diphenyl-1,3-butadiene;
bis(trimethylsilyl)amidoborane(2-iso-propyl, 4-[3',5'-di-phenylphenyl]indenyl)₂ η⁴-1,4-diphenyl-1,3-butadiene;
bis(trimethylsilyl)amidoborane(2-n-butyl, 4-[3',5'-di-phenylphenyl]indenyl)₂ η⁴-1,4-diphenyl-1,3-butadiene;

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bis(trimethylsilyl)amidoborane(2-iso-butyl, 4-[3',5'-di-phenylphenyl]indenyl)₂ η⁴-1,4-diphenyl-1,3-butadiene;

bis(trimethylsilyl)amidoborane(2-sec-butyl, 4-[3',5'-di-phenylphenyl]indenyl)₂ η⁴-1,4-diphenyl-1,3-butadiene;

bis(trimethylsilyl)amidoborane(2-tert-butyl, 4-[3',5'-di-phenylphenyl]indenyl)₂ η⁴-1,4-diphenyl-1,3-butadiene;

bis(trimethylsilyl)amidoborane(2-methyl, 4-[3',5'-di-tbutylphenyl]indenyl)₂zirconium dimethyl;

bis(trimethylsilyl)amidoborane(2-ethyl, 4-[3',5'-di-tbutylphenyl]indenyl)₂zirconium dimethyl;

bis(trimethylsilyl)amidoborane(2-n-propyl, 4-[3',5'-di-tbutylphenyl]indenyl)₂zirconium dimethyl;

bis(trimethylsilyl)amidoborane(2-iso-propyl, 4-[3',5'-di-tbutylphenyl]indenyl)₂zirconium dimethyl;

bis(trimethylsilyl)amidoborane(2-n-butyl, 4-[3',5'-di-tbutylphenyl]indenyl)₂zirconium dimethyl;

bis(trimethylsilyl)amidoborane(2-iso-butyl, 4-[3',5'-di-tbutylphenyl]indenyl)₂zirconium dimethyl;

bis(trimethylsilyl)amidoborane(2-sec-butyl, 4-[3',5'-di-tbutylphenyl]indenyl)₂zirconium dimethyl;

bis(trimethylsilyl)amidoborane(2-tert-butyl, 4-[3',5'-di-tbutylphenyl]indenyl)₂zirconium dimethyl;

bis(trimethylsilyl)amidoborane(2-ethyl, 4-[3',5'-bis-trifluoromethylphenyl]indenyl)₂zirconium dimethyl;

bis(trimethylsilyl)amidoborane(2-n-propyl, 4-[3',5'-bis-trifluoromethylphenyl]indenyl)₂zirconium dimethyl;

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bis(trimethylsilyl)amidoborane(2-n-propyl, 4-[3',5'-di-phenylphenyl]indenyl)₂zirconium dimethyl;
bis(trimethylsilyl)amidoborane(2-iso-propyl, 4-[3',5'-di-phenylphenyl]indenyl)₂zirconium dimethyl;
bis(trimethylsilyl)amidoborane(2-n-butyl, 4-[3',5'-di-phenylphenyl]indenyl)₂zirconium dimethyl;
bis(trimethylsilyl)amidoborane(2-iso-butyl, 4-[3',5'-di-phenylphenyl]indenyl)₂zirconium dimethyl;
bis(trimethylsilyl)amidoborane(2-sec-butyl, 4-[3',5'-di-phenylphenyl]indenyl)₂zirconium dimethyl; or
bis(trimethylsilyl)amidoborane(2-tert-butyl, 4-[3',5'-di-phenylphenyl]indenyl)₂zirconium dimethyl.

51. (original) The process of claim 1 wherein the first catalyst component is also present in the second reaction zone.
52. (original) The process of claim 1 wherein one catalyst component is present in at least one reaction zone and the other catalyst component is present in the second reaction zone.
53. (original) The process of claim 1 wherein 3% or more of the combined catalyst components is not injected into the first reaction zone.
54. (original) The process of claim 1 wherein hydrogen is introduced into a reaction zone.
55. (original) The process of claim 1 wherein the temperature is different in the reaction zones.

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56. (original) The process of claim 1 wherein the temperature in a reaction zone is varied.

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